Vol. 1028, Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENTS

March 1, 1983

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

March 1, 1983 Volume 1028 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

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European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Jan. 1983

Affirmed	244
Affirmed in Part	19
Reversed	69
Total	332

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,856,159, Re. S.N. 447,017, Filed Dec. 6, 1982, Cl. 414/14, SHIPSIDE CARGO CONVEYANCE DEVICE, Paul Soros, Owner of Record: *Inventor,* Attorney or Agent: Myron Cohen, et al., Ex. Gp.: 314

4,131,096, Re. S.N. 450,343, Filed Dec. 16, 1982, Cl. 123/90.15, VALVE TIMING MECHANISMS, Stephen W. Mitchell, Owner of Record: *Inventor,* Attorney or Agent: Paul N. Kokulis, et al., Ex. Gp.: 342

4,196,178, Re. S.N. 451,058, Filed Dec. 20, 1982, Cl. 423/290, PROCESS FOR PRODUCING METALLIC NITRIDE POWDER, Tadashi Iwai, et al., Owner of Record: *U. B. E. Industries, Ltd., Yamaguchi, Japan,* Attorney or Agent: Austin R. Miller, et al., Ex. Gp.: 113

4,232,771, Re. S.N. 440,415, Filed Dec. 9, 1982, Cl. 192/.096, SINGLE LEVER REMOTE CONTROL, Anthony P. Prince, Owner of Record: *Inventor,* Attorney or Agent: Anthony P. Prince, et al., Ex. Gp.: 352

4,238,228, Re. S.N. 447,805, Filed Dec. 8, 1982, Cl. 75/76, NON-FERROUS METAL TREATMENT, J. Keith Brimacombe, et al., Owner of Record: *Canadian Liquid Air Ltd./Air Liquide Canada Ltee, Montreal, Quebec, Canada,* Attorney or Agent: Alan Swabey, et al., Ex. Gp.: 111

4,239,516, Re. S.N. 447,784, Filed Dec. 8, 1982, Cl. 55/389, POROUS MEDIA TO SEPARATE GASES LIQUID DROPLETS AND/OR SOLID PARTICLES FROM CASES OR VAPORS AND COALESCE ENTRAINED DROPLETS, Max Klein, Owner of Record: *Dann, Dorfman, et al., Philadelphia, Pa.,* Attorney or Agent: Patrick J. Hagan, et al., Ex. Gp.: 176

4,253,455, Re. S.N. 451,287, Filed Dec. 20, 1982, Cl. 128/204.26, BREATHING VALVE ASSEMBLY WITH DIAPHRAGM CONTROL OF THE EXHAUST PORTS, Loyal G. Netteland, Owner of Record: *A-T-O, Inc., Willoughby, Ohio,* Attorney or Agent: Edwin T. Bean, Jr., Ex. Gp.: 335

4,280,424, Re. S.N. 447,016, Filed Dec. 6, 1982, Cl. 112/153E, HOUSEHOLD TYPE SEWING MACHINE HAVING MICROPROCESSOR CONTROL, Gianfranco Carbonato, et al., Owner of Record: *Necchi S.p.A., Pavia, Italy,* Attorney or Agent: Myron Cohen, et al., Ex. Gp.: 353

4,301,531, Re. S.N. 392,976, Filed June 28, 1982, Cl. 370/62, THREE-PARTY CONFERENCE CIRCUIT FOR DIGITAL TIME-DIVISION-MULTIPLEX COMMUNICATION SYSTEM, Barry D. Lubin, Owner of Record: *Motorola, Inc., Schaumburg, Ill.,* Attorney or Agent: James W. Gillman, et al., Ex. Gp.: 234

4,349,443, Re. S.N. 446,217, Filed Dec. 2, 1982, Cl. 252/8.50A, VISCOSIFIER AND FLUID LOSS CONTROL SYSTEM, Jacob Block, Owner of Record: *W. R. Grace & Co., Columbia, Md.,* Attorney or Agent: Howard J. Troffkin, Ex. Gp.: 223

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,048,780, Reexam. No. 90/000,317, Requested: Jan. 17, 1983, Cl. 53/26, METHOD AND APPARATUS FOR PLACING OBJECTS IN BOXES, Alexis Chenevard, Owner of Record: *Sapal Societe Anonyme des Plieuses Automatiques, Vaud, Switzerland,* Attorney or Agent: Stevens, Davis, et al., Ex. Gp.: 320, Requester: George M. Thomas, Atlanta, Ga.

4,123,961, Reexam. No. 90/000,319, Requested: Jan. 26, 1983, Cl. 411/429, WHEEL NUT WITH WELDED CAP, Albert A. Jadach, Owner of Record: *Key International Mfg., Inc., Southfield, Mi.,* Attorney or Agent: Krass, Young & Schivley, Ex. Gp.: 350, Requester: Owner

4,206,095, Reexam. No. 90/000,321, Requested: Jan. 24, 1983, Cl. 260/17.2, PROCESS FOR PRODUCING PARTICULATE RESOLES FROM AQUEOUS DISPERSION, John Wynstra, et al., Owner of Record: *Union Carbide Corp., Danbury, Conn.*, Attorney or Agent: Bernard F. Crowe, Ex. Gp.: 140, Requester: John T. Synnestvedt & Alexis Barron, Philadelphia, Pa.

National Technical Information Service

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The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

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Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE

SN 6-380,374. WRAPPING MACHINE.

SN 6-385,161. DEHYDRATION OF ETHANOL.

SN 6-409,268. PROCESS FOR CONVERSION OF CELLULOSE TO AMINO ACIDS BY RADIO-FREQUENCY PLASMA OF NITROGEN AND HYDROGEN.

SN 6-423,403. PROCESS FOR CONTROLLING ANTIMICROBIAL ACTIVITY USING GLYCOLIC ACID DERIVATIVES.

SN 6-415,778. METHOD FOR SCREENING BACTERIA AND APPLICATION THEREOF FOR FIELD CONTROL OF DISEASES CAUSED BY *GAEUMANNOMYCES GRAMINIS*.

SN 6-426,439. CHEMOTHERAPEUTICALLY ACTIVE MAYTANSINOIDS: TREFLORINE, TRENUDINE, AND N-METHYLTRENUDONE.

SN 6-436,541. PRODUCTION OF FOOD-GRADE CORN GERM PRODUCT BY SUPERCRITICAL FLUID EXTRACTION.

SN 6-411,196. SPECTROPHOTOMETRIC METHOD FOR SIMULTANEOUSLY ANALYZING PROTEIN AND FAT CONTENTS IN MILK.

SN 6-385,172. METHOD FOR REMOVING THE OUTER WAXY CUTIN-CONTAINING LAYER FROM PAPAYA.

SN 6-436,497. T-1-R9, A NEW STRAIN OF *TRICHODERMA VIRIDE*.

SN 6-435,597. METHOD OF INCREASING BIOMASS IN PLANTS.

SN 6-429,913. CHEMICAL APPLICATOR.

SN 6-426,438. RAPID PRODUCTION OF ISOPROPENYL.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-350,221. A SHORT TOTAL SYNTHESIS OF DIHYDROTHEBAINONE, DIHYDROCODEINONE, AND NORDIHYDROCODEINONE.

SN 6-309,110. PROTEIN FROM SV40 RECOMBINANTS.

SN 6-445,451. PROCESS FOR USING POXVIRUSES AS VECTORS FOR EXPRESSION OF FOREIGN GENES.

SN 6-445,892. PRODUCTION OF VACCINIA VIRUS RECOMBINANTS THAT EXPRESS HEPATITIS B VIRUS SURFACE ANTIGEN.

SN 6-442,173. DETECTION OF CLOSED CIRCULAR DNA IN DNA MIXTURES AND SEPARATION.

SN 6-452,783. HUMAN GROWTH HORMONE PRODUCED BY RECOMBINANT DNA IN MOUSE CELLS.

SN 6-436,542. POLYHALOGENATED PHENYL ISOCYANATE SYNTHESIS WITH EXCESS PHOSGENE AND EITHER TRIETHYLAMINE OR TETRAMETHYLUREA.

SN 6-426,141. LYSIS FILTRATION CULTURE CHAMBER.

PATENT NOTICES

Certificates of Correction for the Week of Mar. 1, 1983

Re. 31,065	4,328,040	4,349,333	4,358,869
D. 265,798	4,328,631	4,349,529	4,359,246
D. 267,032	4,328,726	4,349,777	4,359,310
3,790,939	4,331,226	4,350,370	4,359,336
3,966,773	4,331,772	4,350,711	4,359,611
4,172,416	4,331,872	4,351,346	4,360,156
4,211,305	4,333,630	4,351,512	4,360,296
4,230,756	4,335,243	4,351,666	4,360,379
4,231,129	4,335,427	4,351,679	4,360,808
4,233,500	4,335,908	4,351,824	4,360,852
4,252,663	4,336,468	4,351,898	4,361,058
4,255,579	4,337,303	4,351,957	4,361,124
4,261,042	4,337,379	4,352,161	4,361,152
4,264,475	4,337,533	4,352,399	4,361,272
4,274,143	4,338,309	4,352,458	4,361,288
4,276,579	4,339,248	4,352,518	4,361,544
4,281,408	4,340,852	4,352,779	4,361,575
4,282,078	4,341,434	4,353,469	4,361,614
4,295,731	4,341,463	4,353,757	4,361,643
4,301,574	4,341,792	4,353,944	4,361,659
4,301,820	4,343,264	4,354,397	4,362,233
4,306,278	4,343,275	4,355,283	4,362,823
4,306,946	4,343,737	4,355,375	4,363,533
4,310,499	4,344,833	4,355,700	4,363,746
4,319,655	4,345,192	4,356,112	4,363,842
4,320,282	4,345,468	4,356,175	4,364,175
4,322,331	4,346,221	4,356,685	4,364,200
4,323,074	4,346,421	4,356,688	4,364,391
4,323,987	4,346,982	4,357,233	4,364,921
4,324,905	4,347,000	4,357,350	4,365,036
4,325,046	4,347,339	4,357,377	4,365,390
4,325,056	4,347,625	4,357,444	4,366,498
4,325,312	4,348,265	4,357,716	4,366,672
4,326,372	4,348,273	4,357,852	4,366,969
4,327,399	4,348,305	4,358,065	4,367,405
4,327,899	4,348,772	4,358,289	4,367,800

Disclaimers

3,362,820.—*Ehrhard Hellmig,* Leverkusen, Germany. COLOR MASKING PROCEDURE AND MATERIALS THEREFOR. Patent dated Jan. 9, 1968. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,368,897.—*Walter F. Burrows,* Greene, N.Y. VISCOUS PRE-DEVELOPMENT SOLUTION FOR REWIND PROCESSING. Patent dated Feb. 13, 1968. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,421,896.—*Alex P. Altavilla,* Johnson City, N.Y. PREVENTION OF SILVER OCCLUSION IN COLOR PHOTOGRAPHY. Patent dated Jan. 14, 1969. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,469,983.—*Carl E. Diener* and *William G. Herrick,* Binghamton, N.Y. PREPARATION OF PHOTOPOLYMER LITHOGRAPHIC OFFSET PAPER PLATES. Patent dated Sept. 30, 1969. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,474,719.—*Steven Levinos,* Vestal, N.Y. OFFSET PRINTING PLATES. Patent dated Oct. 28, 1969. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,801,638.—*Edward J. Cerwonka,* Binghamton, N.Y. TRIACRYLYLDIETHYLENETRIAMINE, METHOD OF PRODUCING THE SAME, AND PHOTOPOLYMERIZATION PROCESS AND SYSTEM UTILIZING THE SAME. Patent dated Apr. 2, 1974. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

4,060,418.—*Burton H. Waxman,* Endwell and *Michael C. Mourning,* Vestal, N.Y. PHENOXY CARBONYL DERIVATIVES OF A PARAPHENYLENEDIAMINE COLOR DEVELOPER AND THEIR USE IN AN IMAGE-RECEIVING SHEET FOR COLOR DIFFUSION TRANSFER. Patent dated Nov. 29, 1977. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all of the claims of said patent.

4,092,266.—*Heinz Abel* and *Alfred Berger,* Reinach, Switzerland. PROCESS FOR REMOVING FOAM FROM AQUEOUS SYSTEMS AND COMPOSITION USEFUL THEREIN. Patent dated May 30, 1978. Disclaimer filed Sept. 30, 1982, by the assignee, *Ciba-Geigy Corp.*

The term of this patent subsequent to Jan. 31, 1995, has been disclaimed.

4,132,549.—*Frank J. Loprest,* Binghamton, N.Y., and *Eugene F. McInerney,* Chagrin Falls, Ohio. IMAGING SYSTEM. Patent dated Jan. 2, 1979. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

4,189,319.—*Burton H. Waxman,* Endwell, N.Y. ARGININE OR SALT THEREOF AS A DEVELOPMENT ACCELERATOR OF COLOR DEVELOPMENT OF COLOR PHOTOGRAPHIC MATERIALS. Patent dated Feb. 19, 1980. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

4,326,990.—*Harold W. Mark* and *Ernest A. Zuech,* Bartlesville, Okla. PASSIVATING AGENT COMPOSITION AND METHOD FOR ITS PREPARATION. Patent dated Apr. 27, 1982. Disclaimer filed Nov. 5, 1982, by the assignee, *Phillips Petroleum Co.*

Hereby enters this disclaimer to claim 1 of said patent.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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	Cleveland Public Library	(216) 623-2870
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 25, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-12-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-06-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	12-31-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-15-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-30-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	2-13-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-20-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	1-09-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-05-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-26-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-20-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during December 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,221,339 to 3,226,728, inclusive

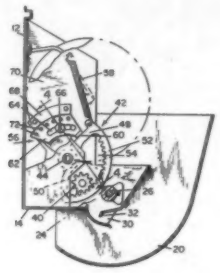
Plant Patents ..... Numbers 2,577 to 2,584 inclusive

REEXAMINATIONS

MARCH 1, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,459,353 (53rd)
ADJUSTABLE LENGTH SHEET DISPENSER
Milford J. Taylor, Erving, Mass., assignor to Erving Paper Mills, Erving, Mass.
Reexamination Request No. 90/000,151, Jan. 28, 1982.
Reexamination Certificate for Patent No. 3,459,353, issued Aug. 5, 1969, Ser. No. 658,164, Aug. 3, 1967.
U.S. Cl. 226/132 **Int. Cl.[3] B65H 17/22**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–7, having been finally determined to be unpatentable, are cancelled.

1. A dispenser for sheet material including a housing, a manually operated device on the housing for causing the material to be drawn from a source of supply within the housing for dispensing, said manually operated device including a roll engaged with the sheet and having a predetermined variable rotative action to travel a predetermined but variable length of sheet material to be dispensed, a movable element to actuate the roll, means inside the housng controlling the degree of motion of said element, means also inside the housing to adjust said controlling means, to vary the length of sheet material dispensed at each actuation of the roll, said adjusting means being capable of actuation only from the inside of the housing to prevent unauthorized adjustment.

B1 4,272,684 (54th)
OPTICAL BEAM-SPLITTING ARRANGEMENTS ON OBJECT SIDE OF A LENS
Ned J. Seachman, Penfield, N.Y. assignor to Xerox Corporation, Stamford, Conn.
Reexamination Request No. 90/000,147, Jan. 26, 1982.
Reexamination Certificate for Patent No. 4,272,684, issued Jun. 9, 1981, Ser. No. 949,179, Oct. 6, 1978.
U.S. Cl. 250/578 **Int. Cl.[3] N01J 3/16.**

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–3, 5, 9 and 10, having been finally determined to be unpatentable, are cancelled.

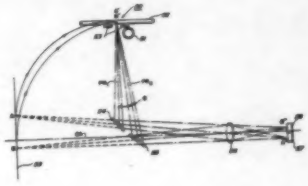
Claims 4, 6, 7 and 11 are determined to be patentable as amended:

Claims 8 and 12–14, dependent on amended claims, are determined to be patentable.

4. An optical system [as defined in claim 1] *for focusing light reflected from an illuminated line on an object plane onto an image plan including*

an illumination means for illuminating said object line,

two mirrors positioned with respect to said illuminated object line so as to simultaneously reflect identical images of said line into the entrance pupil of a lens, said mirrors arranged to fold apparently distinct, parallel object lines lying on an apparent object plane



located perpendicular to the optical axis of said lens onto a common object line lying on the real object plane, said lens focusing at least a portion of said reflected object line images onto a separate portion of said image plane wherein said image plane comprises at least two photosensor arrays, each array comprising a plurality of photosensitive elements which are individually addressable, said arrays providing electrical signals in response to said images focused thereon.

B1 4,070,256 (55th)
ACID ZINC ELECTROPLATING BATH AND PROCESS
Grace F. Hsu, Somers; Jaan-Jiue Fong, Tolland, both of Conn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Reexamination Request No. 90/000,126 Dec. 18, 1981.
Reexamination Certificate for Patent No. 4,070,256, issued Jan. 24, 1978, Ser. No. 587,147, Jun. 16, 1975.
U.S. Cl 204/55 R **Int. Cl.[3] C25D 3/2.**

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 6 are determined to be patentable as amended:

Claims 2–5 and 7, dependent on amended claims, are determined to be patentable.

1. An aqueous ammonium ion-free electroplating bath for depositing zinc comprising about 4.0 to about 100.0 grams per liter of zinc ion, from about 15.0 to about 250.0 grams per liter of an ammoniumfree electrolyte, from about 2.0 to about 40.0 grams per liter of a nonionic polyoxyalkylated compound selected from the group consisting of alkoxylated alkyl phenols, alkoxylated alkyl naphthols, alkoxylated aliphatic monohydric alcohols, alkoxylated polyoxypropylene glycols, alkoxylated, 2,4,7,9-tetramethyl-5-decyne-4,7-diol, alkoxylated ethylene diamine, alkoxylated fatty acids, alkoxylated amides, and alkoxylated esters, from about 0.1 to about 15.0 grams per liter of a carboxylic acid, and at least about 1.0 grams per liter of boric acid or a soluble salt thereof, the pH of said bath being from about 3.0 to about 6.5, *said bath being free from chelating agents capable of complexing with heavy metal ions.*

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 1, 1983

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,801

SILICON SOLAR CELL

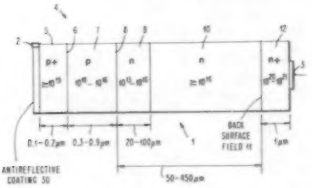
Harold J. Hovel, Diane Ct., Katonah, N.Y. 10598

Continuation of Ser. No. 229,367, Jan. 29, 1981, abandoned, which is a continuation-in-part of Ser. No. 968,888, Dec. 13, 1978, abandoned, which is a continuation of Ser. No. 101,964, Dec. 10, 1979, abandoned. This application Aug. 30, 1982, Ser. No. 412,424

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—255

1 Sheets Drawing. 22 Pages Specification



A high efficiency silicon solar cell (**1**) may be constructed by providing a two-stage drift field emitter (**4**) with a 1 micron thickness on a drift field base region (**10**) with a back surface field region (**12**). The stage (**7**) of the drift field emitter adjacent to the junction (**8**) is moderately doped from 10^{18} to 10^{16} atoms/cc adjacent the junction to minimize bandgap shrinkage and to maximize carrier lifetime while the stage of the emitter adjacent the surface is highly doped at 10^{19} atoms/cc to minimize sheet resistance. The drift field is aiding in both the emitter and base regions. The size of the base (**10**) is less than an effective diffusion length. There is a difference in doping level in the base depending on the conductivity type of the silicon. For n-conductivity type the base is doped 10^{13} atoms/cc at the pn junction, increasing to 10^{16} atoms/cc in the drift field region. For p-conductivity type the base is doped 10^{16} at the junction, increasing to 10^{18} atoms/cc in the drift field. A back surface field is provided adjacent the ohmic contact (**3**) on the part of the base remote from the junction by doping to 10^{20} to 10^{21} atoms/cc. A passivating antireflective layer (**30**) is added to the light incident surface. The 1 micron emitter region (**4**) contains a 0.1 to 0.2 μm thick high conducting region (**5**) adjacent the antireflective coating (**30**) on the light incident surface and a drift field region (**7**) 0.3 to 0.9 μm thick. The base region (**10**) has a drift field region (**9**) 20 to 100 μm thick and the overall base region (**10**) is 50 to 450 μm thick. The back surface field region (**12**) is 1 μm thick.

REISSUES

MARCH 1, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,161

SAFETY VALVE ASSEMBLY FOR CONTROLLING CLUTCH AND BRAKE IN POWER PRESS OR THE LIKE

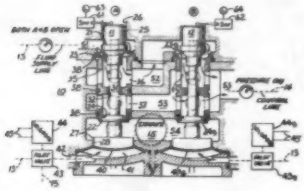
Kenneth R. Mahorney, deceased, late of Bartlett, Ill. (by Arditn Mahorney, legal representative), assignor to Ross Operating Valve Company, Detroit, Mich.

Reissued No. Re. 28,520, dated Aug. 19, 1975, Ser. No. 397,306, Sep. 14, 1973.

Original No. 3,670,767, dated Jun. 20, 1972, Ser. No. 122,008, Mar. 8, 1971. Application for reissue Oct. 9, 1979, Ser. No. 82,593

Int. Cl.³ F15B *13/043*

U.S. Cl. 137—596.16 **14 Claims**



7. A safety control system for fluid actuated devices comprising housing means having a supply port, a control port and at least one exhaust port, first and second valve means in said housing means, each valve means having **only one** *supply and* **only one** *exhaust valve* **[[***members***]] member** *movable simultaneously between a supply position in which the supply valve member is open and the exhaust valve member closed, and an exhaust position in which the exhaust valve member is open and the supply valve member is closed, means connecting the supply valve members of said first and second valve means in series between said [illegible] and control ports, and means connecting the exhaust valve members of said first and second valve means in parallel between said control and exhaust ports, whereby the movement of either valve means to its exhaust position when the other valve means remains partially or fully in its supply position will result in a complete cutoff of fluid pressure from the supply to the control port and a direct connection from the control port to at least one of the exhaust ports, said direct connection bypassing the supply valve members of both said first and second valve means.*

Re. 31,162

DISPLAY PANEL FOR A VENDING MACHINE

G. Merle Bachmann, Stone Mountain; Homer C. Burrous, Atlanta, and Walter L. Shelton, Marietta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Original No. 4,245,730, dated Jan. 20, 1981, Ser. No. 47,768, Jun. 12, 1979. Application for reissue Feb. 23, 1982, Ser. No. 351,465

Int. Cl.³ G07F *5/18*

U.S. Cl. 194—1 A **21 Claims**

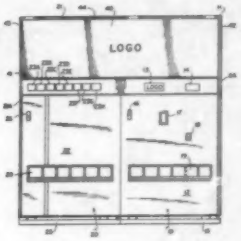
1. A display panel for use in combination with first and second vending machine units positioned in a side-by-side relationship comprising:

a sign panel extending across substantially the entire width dimension of said vending machine units and including a logo or product identification thereon;

an enlarged primary product selection button with said logo or same product identification positioned thereon and being disposed on said first vending machine unit directly adjacent to a coin insertion slot therein; and

a plurality of secondary product selection buttons disposed on the second vending machine unit which are displaced a substantial distance away from the primary product selection button and said coin insertion slot of said first vending machine unit, said secondary product selection buttons being smaller relative to said enlarged primary product selection button;

said coin insertion slot of said first vending machine unit



being in communication with a single coin mechanism which controls product dispensing of both the first and second vending machine units;

whereby the enlarged primary product selection button being disposed directly adjacent to said coin insertion slot and including the same logo or product identification as said sign panel attracts the attention of a potential consumer to effect a sale of the primary product.

Re. 31,163

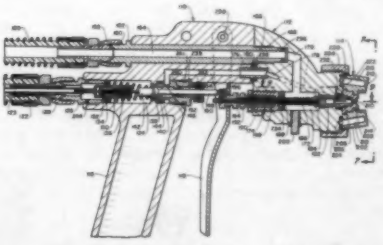
VALVE ASSEMBLY AND SPRAYING APPARATUS THEREFOR

Charles R. Gardner, Thousand Oaks, Calif., assignor to Poly-Glas Systems, Inc., Sun Valley, Calif.

Original No. 4,123,007, dated Oct. 31, 1978, Ser. No. 739,667, Nov. 8, 1976. Continuation-in-part of Ser. No. 647,688, Jan. 9, 1976, abandoned, and a continuation-in-part of Ser. No. 714,222, Aug. 13, 1976, abandoned, which is a continuation of Ser. No. 571,456, Apr. 25, 1975, abandoned. Application for reissue Apr. 13, 1981, Ser. No. 253,231

Int. Cl.³ B05B *7/08*

U.S. Cl. 239—414 **31 Claims**



1. Apparatus for mixing two components comprising:

a chamber having an inlet and an outlet;

a housing secured in said chamber;

at least one passageway between the exterior of said housing and the interior of said chamber;

said housing having a bore;

an expendable valve assembly installed in said bore, said expendable valve assembly being independent of said housing;

mechanical means for opening and closing the valve in said expendable valve assembly;

first conduit connecting means on said housing for delivering a first component to said expendable valve assembly at the inlet side of said chamber;

second conduit connecting means for delivering a second component to the inlet side of said chamber;

whereby opening of the valve in said expendable valve assembly causes the two components to be mixed in said chamber for delivery to the outlet.

Re. 31,164

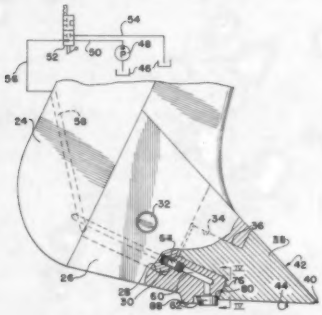
COOLING SYSTEM FOR ROCK RIPPER TIP

Delwin E. Cobb, Peoria, Ill.; Nathan Gutman, Simsbury, Conn., and Richard E. Livesay, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Original No. 4,070,064, dated Jan. 24, 1978, Ser. No. 693,066, Jun. 4, 1976. Application for reissue Mar. 15, 1979, Ser. No. 20,888

Int. Cl.³ E02F *5/02*

U.S. Cl. 299—81 **21 Claims**



11. In an earth cutting apparatus having a cutting tool, said cutting tool having a cutting edge terminating forwardly at the juncture of a pair of side surfaces lying in a pair of laterally spaced planes, a top surface, and a bottom surface of predetermined width and length, the improvement comprising:

means for spraying and directly impinging pressurized coolant across the full width of said bottom surface and the full width of said cutting edge, said bottom surface being defined as that portion of the tool in contact with the unsevered earth during a cutting operation of said apparatus and said means located between the planes having said side surfaces lying therein.

Re. 31,165

TRANSPARENT MOULDING COMPOSITION OF A POLYCARBONATE AND A RESIN

Volker Serini, Krefeld; Gert Humme; Karl-Heinz Ott, both of Leverkusen; Wolfgang Cohnen, Krefeld-Uerdingen, and Hugo Vernaleken, Walsrode, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Original No. 3,880,783, dated Apr. 29, 1975, Ser. No. 421,233, Dec. 3, 1973. Application for reissue Sep. 21, 1981, Ser. No. 303,999

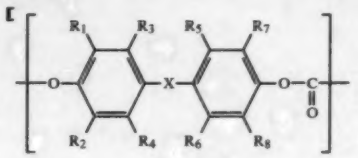
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1973, 2329646

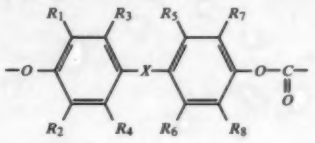
Int. Cl.³ C08L *9/02, 9/06, 51/04, 69/00*

U.S. Cl. 525—67 **15 Claims**

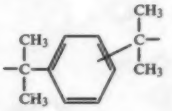
1. A transparent moulding compound which comprises

a. 10 to 95% by weight of a transparent aromatic polycarbonate, the linear chains of which consist [to] *of* at least 50% of recurrent structural units of *the* formula [(1)]





in which R_1 to R_8, which may be the same or different, represent hydrogen or alkyl *with the proviso that at least one of the R_1 to R_8 substitutents is an alkyl group* and X represents a single bond, a C_1 to C_{12} alkylene or alkylidene group or



[if at least one of the R_1 to R_8 substituents is an alkyl group or represents a C_6 to C_{12} alkylene or alkylidene group if R_1 to R_8 is hydrogen] and

b. 5 to 90% by weight of a transparent rubber and/or a transparent resin which contains rubber, the difference in refractive indices between (a) and (b) being not more than 0.010.

Re. 31,166

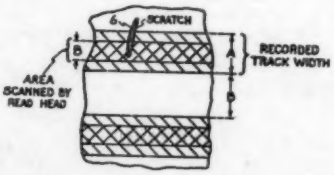
RECOVERY OF NORMALLY ILLEGIBLE, MAGNETICALLY RECORDED INFORMATION

Peter B. Korda, Los Angeles, Calif., assignor to RCA Corporation, New York, N.Y.

Original No. 3,869,721, dated Mar. 4, 1975, Ser. No. 403,899, Oct. 5, 1973. Continuation of Ser. No. 659,366, Aug. 9, 1967, abandoned. Application for reissue Nov. 7, 1979, Ser. No. 91,879

Int. Cl.³ G11B *5/09, 21/10*

U.S. Cl. 360—53 **4 Claims**



9. In a system for reading by means of a head along the length of a track on a record medium by creating relative movement between the medium and the head, at least a portion of said head being positioned in signal reading relationship over at least a portion of the width of said track;

an error detection means responsive to a signal read from said track by said head for detecting an error;

means responsive to said detected error for creating lateral relative movement between said head and said track such that said head is in a signal reading relationship over a different portion of the width of said track as compared to the original position of said head, and for causing said head to again read said track where said signal was originally read but with said head over said different portion of the width of said track; and

further including means responsive to an error detected by the error detection means for again creating lateral relative movement between said head and track in a direction opposite the direction of the first mentioned lateral move such that said head is over a different portion of the width of said track than was the head in its original position and its position after the first mentioned lateral move, and for causing said head to again read said track where said signal was originally read but with said head in a new lateral position relative to said track resulting from the second mentioned lateral move.

PLANT PATENTS

GRANTED MARCH 1, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,986

SEEDLING ROSE NO. 76-23R

Lowell L. Hoy, Jr., Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.

Filed Sep. 10, 1981, Ser. No. 300,941
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct variety of rose plant, substantially as herein shown and described, characterized by its abundant and continuous production of flowers, its free and vigorous growth habit and its long pointed bud at cutting stage.

4,987

FLOWERING PLUM TREE

J. Frank Schmidt, III, 14131 SE. 312th, Boring, Oreg. 97009

Filed Jun. 22, 1981, Ser. No. 275,715
Int. Cl.[3] A01H *5/12*
U.S. Cl. Plt.—38 1 Claim

1. A new and distinct variety of flowering plum tree substantially as herein shown and described, characterized particularly as a novelty by a vigorous rate of growth, large foliage, heavier branching and red coloration.

PATENTS

GRANTED MAR. 1, 1983

ERRATA

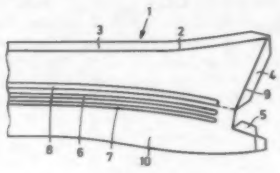
For CLASS	See PATENT NO.
494–016	4,375,272
435–002	4,375,459
367–011	4,375,671

PATENTS

GRANTED MARCH 1, 1983

GENERAL AND MECHANICAL

4,375,107
COLLAR FOR AN ARTICLE OF CLOTHING
Urs Bächtiger, Zurich, Switzerland, assignor to Gygli Technik AG., Switzerland
PCT No. PCT/CH79/00162, § 371 Date Aug. 22, 1980, § 102(e) Date Aug. 20, 1980, PCT Pub. No. WO80/01233, PCT Pub. Date Jun. 26, 1980
PCT Filed Dec. 18, 1979, Ser. No. 200,502
Claims priority, application Switzerland, Dec. 22, 1978, 13137/78; Oct. 18, 1979, 9368/79
Int. Cl.³ A41B *3/04*
U.S. Cl. 2—131 **8 Claims**



1. In a collar for an article of clothing, such as a skirt or blouse, including a turn down portion and a neck band portion separated by a collar fold line, and being formed of a one-piece outer fabric member, a one-piece inner fabric member and an insert between the fabric members, the improvement comprising

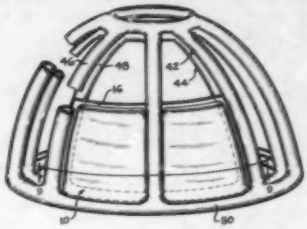
an interrupting portion in said inset corresponding to said collar fold line;

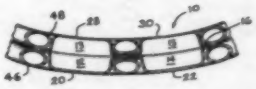
said outer fabric member and said insert forming, on one side of said collar fold line, a first fold directed toward said turn down portion and a second fold oppositely directed toward said neck band portion, the path of said first and second folds following said interrupting portion; and

at least one seam holding said folds together.

4,375,108
ENERGY-ABSORBING INSERT FOR PROTECTIVE HEADGEAR
Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.
Filed Jan. 28, 1981, Ser. No. 229,199
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—413 **4 Claims**

1. An energy-absorbing cushion for use in protective headgear of the type having an outer helmet shell adapted to be supported over a wearer's head by a flexible inner liner, said cushion comprising a plurality of resilient wall members secured together so as to form a plurality of fluid-filled chambers having walls of resilient material confining the fluid within said chambers, said cushion being mountable on the inside of said helmet shell so as to contact the wearer's head and provide at least partial support for said helmet shell, said fluid-filled chambers being formed in pairs positionable concentrically about the wearer's head with one of said wall members forming a common wall of said resilient material dividing said pairs of chambers, each of said pairs including an inner fluid-filled chamber for contacting the wearer's head and an outer fluid-filled chamber to be positioned adjacent the outer helmet shell, each of said inner and outer fluid chambers being positioned



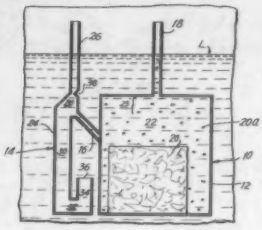


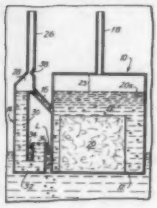
side-by-side with a similar chamber and being in fluid communication therewith through a fluid carrying passage.

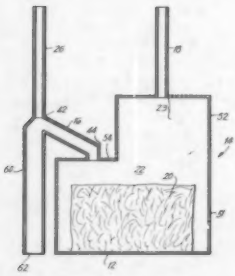
4,375,109
PASSIVE DISPENSER HAVING A DOUBLE AIR VENT SYSTEM
Gregory R. Jones, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio
Filed Feb. 22, 1982, Ser. No. 350,839
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—228 **11 Claims**

1. A passive dosage dispenser for containing a quantity of a solution isolated from a body of liquid in which said dispenser is immersed and for causing a predetermined volume of said solution to issue from said dispenser in response to the level of said body of liquid being lowered from a first elevation to a second elevation, the dispenser comprising a product chamber having an air venting means, a refill/discharge pathway having an exit/inlet port at the bottom portion thereof, a venting conduit connected to the top of said pathway, and an inclined

conduit having a first end and a second end, the first end being connected to said refill/discharge pathway and the second end







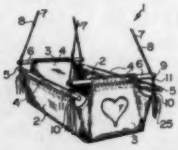
being connected to said product chamber, said first end being disposed at a higher elevation than said second end.

4,375,110

HAMMOCK, ESPECIALLY BABY HAMMOCK

Joyce O. Murphy, Northwood Crafts, Box 18, Strong, Me. 04983

Filed May 20, 1981, Ser. No. 265,378
Int. Cl.³ A47D 7/04
U.S. Cl. 5—98 B **9 Claims**



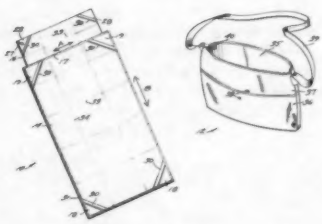
1. A hammock, comprising a hammock body with four corners and made of a suitable material having longitudinal side panels, end panels and a bottom, each panel having an upper edge and rod holding means secured to each other edge, two stiff longitudinal rods operatively held by the respective rod holding means of the longitudinal panels, two stiff end rods operatively held by the respective rod holding means of the end panels, said stiff longitudinal rods and said stiff end rods having such a length that the rod ends overlap at each of said four corners, and four rope means for interconnecting the respective overlapping rod ends at each of the four corners and for suspending the hammock whereby each rope means is provided for performing simultaneously a rod connecting function and a hammock suspending function, wherein each of the four rope means comprises a set of four lengths of rope, each set forming a suspension end and a group of four free rope ends, said hammock further comprising means for connecting said four free rope ends to both overlapping ends of the rods at the respective corner, and wherein said connecting means comprise an opening through each of said rod ends, wherein two of said four free rope ends at each corner extend through said opening while the remaining two free rope ends extend around the respective rod, and wherein said means for connecting comprise knot means for releasably tying said free rope ends at least below the lower rod end.

4,375,111

CONVERTIBLE MAT AND CARRYING BAG COMBINATION

Norman R. Hall, 1914 Shamrock Ave., Dupont Heights, Md. 20027

Continuation-in-part of Ser. No. 70,979, Sep. 6, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 192,029
Int. Cl.³ A47G 9/06; A45C 9/00
U.S. Cl. 5—419 **6 Claims**



1. A convertible mat and carrying bag combination comprising:

a mat including a body portion of readily foldable lightweight sheet material, and a head portion;

said body portion being generally quadrate in plan, having four corners each formed by substantially perpendicular edges, and being elongated and foldable in first and second substantially perpendicular dimensions of elongation, and comprising: first and second layers of a material selected from the group consisting essentially of nylon, and materials having the same general durability, strength, bacteria-resistance, and weight properties as nylon; a layer of thin plastic foam sandwiched between said first and second layers; and means formed at the edges of all the layers for holding the layers together along their edges;

at least three straps attached to said body portion, one strap associated with each corner of said body portion adjacent said head portion, and one strap associated with a corner of said body portion remote from said head portion;

said head portion being substantially quadrate, having four corners and formed by substantially perpendicular edges, and a pair of straps associated with said head portion, each strap extending from one edge of said head portion to an adjacent substantially perpendicular edge of said head portion adjacent a corner of said head portion remote

from an attachment of said head portion to said body portion;

a carrying bag comprising: first and second bag walls, said walls having edges; fastening means for fastening said walls together along edges and/or portions thereof to define a volume large enough to contain said mat when in a folded condition; and a carrying strap operatively connected to at least one of said bag walls; said fastening means comprising zipper means including a first row of teeth formed along at least three edges of said first bag wall, a second row of teeth formed along at least three portions of said second bag wall corresponding to edges of said first bag wall, and a slider cooperating with said first and second rows of teeth for joining the rows together; and

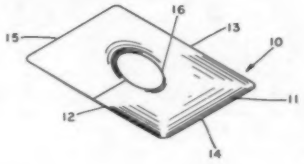
said second bag wall being formed by a portion of said mat adjacent one corner of said mat.

4,375,112

PILLOW TO PROTECT HAIRDO

Virginia R. Leonhart, 248 Grant St., Saegertown, Pa. 16433

Filed Feb. 4, 1980, Ser. No. 117,831
Int. Cl.³ A47G 9/00
U.S. Cl. 5—436 **1 Claim**



1. A pillow and pillow case for protecting a hairdo comprising a pillow body made of a foam material,

the pillow being generally rectangular in shape having two sides and two ends and a central opening,

the edges of said sides, ends and opening of said pillow being curved by having upper and lower surface on the sides and ends cemented together to form a rounded edge around the outer periphery of said pillow and around said opening,

said pillow case having a central opening and being adapted to receive the pillow,

said pillow being cut from one said side edge to said opening,

said pillow case having a central opening and the outer edges of said pillow case being hemmed, providing a space to receive said pillow whereby said pillow can be inserted into said pillow case,

and a zipper around the outside of said pillow case permitting the removal of said pillow from said pillow case.

4,375,113

BEEHIVE SUPERSTRUCTURE TRANSPORT APPARATUS

Edna A. Ewert, 1145 E. Sixth, Fremont, Nebr. 68025

Filed May 18, 1981, Ser. No. 264,474
Int. Cl.³ A01K 59/00
U.S. Cl. 6—12 R **9 Claims**

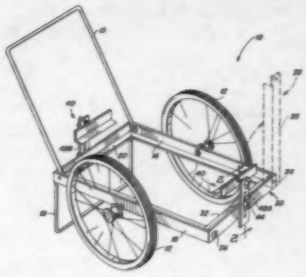
1. A transport apparatus for lifting and carrying a super from a hive body, comprising:

frame means having a base and first and second legs projecting therefrom for flanking said super;

wheel means having wheels coupled to said first and second legs for rotatably supporting said frame means;

gate means having a beam releasably connected between said first and second legs for connecting the ends of said legs; and

shelf means having first and second shelves coupled to opposed regions of said frame means for wedging between



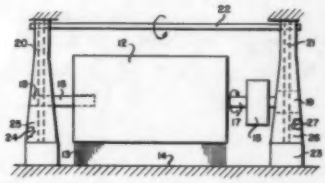
said super and said hive to break the seal therebetween and further for engaging opposing ends of said super.

4,375,114

HIGH SPEED WIRE BRUSHES

Claude Arnal, 6, rue de Pelleport, 75020 Paris, France

Filed May 23, 1980, Ser. No. 152,794
Int. Cl.³ A46B 1/00
U.S. Cl. 15—21 D **1 Claim**



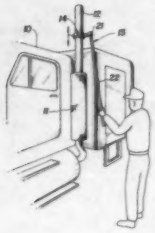
1. In an apparatus for brushing a predetermined surface, a substantially cylindrical wire brush comprising a plurality of parallel disc shaped elements molded into a compact unit and mounted for rotation about an axis, each of said elements comprising a supporting disc having a plurality of openings adjacent the periphery thereof, wire bundles extending through said openings with the ends of said bundles extending radially beyond the periphery of said disc and terminating in wire ends for contacting said surface, said holes being substantially larger than the cross section of said wire bundles supported therein to permit radial movement of said wire bundles relative to said disc, the openings of adjacent discs facing each other in linear alignment to assume simultaneous positioning of the wire ends during their radial movement, each disc being coated with an elastomer material which further coats the wire bundles at least to the periphery of the disc and fills said openings and positions said wire bundles in a central portion of said openings when said brush is in a stationary position, the elastomer coating permitting radial movement of said wire bundles with respect to said disc when said brush is rotated, means for adjusting the position of the axis of said brush, and means for rotating said wire brush to apply pressure under control of said elastomer.

4,375,115

EXHAUST STACK CLEANING AND POLISHING IMPLEMENT

Robert W. Zimmerman, P.O. Box 843, Great Falls, Mont. 59403

Filed Oct. 7, 1981, Ser. No. 309,183
Int. Cl.³ A46B *15/00*; B60S *3/04*
U.S. Cl. 15—160 **8 Claims**



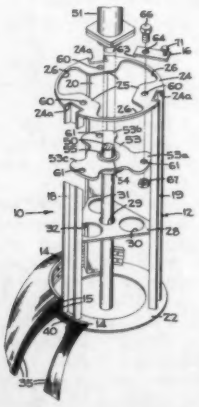
1. A cleaning and polishing implement for truck exhaust stacks and the like comprising an arcuate body portion spanning an arc substantially greater than 180 degrees and having spaced terminals defining a passage leading into the body portion, a cleaning and polishing element attached to the interior of the body portion being substantially coextensive therewith, a short radial arm attached to the body portion at its side remote from said terminals and located midway between the terminals, a short sleeve fixed to the rear end of the radial arm across the axis of the arm, and an elongated handle having a rotational connection with said sleeve and depending from the sleeve and body portion and being disposed at an angle of slightly more than 90 degrees to the plane in which the body portion and radial arm are located.

4,375,116

VEHICLE WASHING BRUSH

Richard E. Hora, Riverside, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Jun. 26, 1981, Ser. No. 277,761
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—181 **8 Claims**



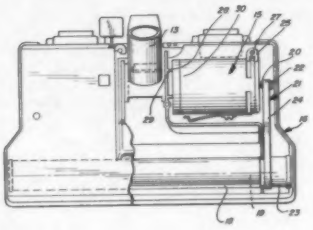
6. In combination, a drive shaft a flange plate secured to said drive shaft, said flange plate having a plurality of equi-spaced peripheral lobes, a core bolted to said flange plate, said core including a plurality of longitudinally disposed channels opening radially outward and extending parallel to the core axis, a plurality of brush filament rings configured to surround said channels and to be stacked thereon in axially extending array, a plurality of spacer rings interspersed between said brush filament rings, a tab extending from each filament ring disposed in flat abutting contact with a wall of one of said channels, and means for retaining said stack of filament and spacer rings in axial position on said core.

4,375,117

FLOOR CLEANER MOTOR MOUNT

John B. Lyman, Bloomington, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 24, 1980, Ser. No. 210,039
Int. Cl.³ A47L *9/22*
U.S. Cl. 15—377 **15 Claims**



7. In a floor cleaner having a brush and means for supporting the brush for rotation about a brush axis, the improvement comprising:

an electric motor having a housing defining an end flange, and a drive shaft defining an axis generally parallel to said brush axis;

belt drive means extending between said shaft and brush for rotating the brush as an incident of rotation of the motor drive shaft;

means for mounting the motor to pivot about a pivot axis spaced from said end flange;

spring means for adjustably pivoting the motor about said pivot axis to properly position said belt drive means; and

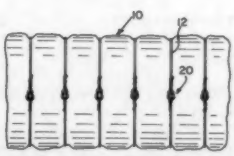
a retainer carried by the housing defining an opening opening transversely to said drive shaft axis and movably receiving said end flange to permit limited pivotal and axial displacement of the motor thereby to retain the motor with the belt drive properly positioned.

4,375,118

WIRE CONNECTION

Millard P. Saylor, 1125 W. Greenbrier Ct., Arlington Heights, Ill. 60004

Filed Sep. 9, 1980, Ser. No. 185,515
Int. Cl.³ B65D *63/02*
U.S. Cl. 24—27 **13 Claims**



1. A wire connection for releasably joining two ends of a wire member to form a continuous loop comprising

a first end portion of the wire member being formed by a first

end segment cooperatively coupled to an adjacent segment of the wire member, said first end segment forming an integral extension of the wire member,

said first end segment being bent back to form a first closed loop lying in a first plane and an integral hooking means disposed between said first loop and said adjacent segment,

a second end portion of the elongated wire member formed by a second end segment being cooperatively coupled to a second adjacent segment of the wire member,

said second end segment forming an integral extension of the wire member and being bent back to form a second loop lying in a second plane,

said second closed loop being arranged to be inserted through said first closed loop with said first and second planes intersecting and being disposed in a near parallel relationship, said second closed loop further being arranged to releasably engage said hooking means in contacting relationship after insertion through said first loop to couple said first and second end portions by a secure connection,

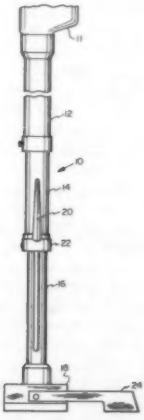
said second closed loop contacting said first closed loop at spaced areas on one side of said first closed loop and at at least one area on the opposite side of said first loop during engaging contact of said second closed loop with said hooking means to reinforce said first end portion, said contact preventing substantial deformation of said first end portion during expected loading of said wire connection for selected release and reuse of said connection.

4,375,119

FLOATING PLATE HOLDER INSTALLATION TOOL

Charles J. DeCaro, Pittsburgh, Pa., assignor to Textron Inc., Providence, R.I.

Filed Feb. 9, 1981, Ser. No. 232,992
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—240 **9 Claims**



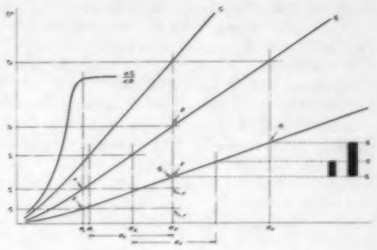
1. In a power driven installation tool for installing threaded fasteners and stress plates by screwing a fastener through a stress plate and into a workpiece and including an outer barrel and a terminal plate holder connected thereto for retaining the stress plate as the fastener is screwed therethrough, the improvement comprises means for providing free movement of the plate holder relative to the outer barrel to permit the stress plate to ride up the fastener as the fastener dwells on the workpiece during installation.

4,375,120

METHOD AND APPARATUS FOR TIGHTENING THREADED FASTENER ASSEMBLIES

Jerry A. Sigmund, Merion Station, Pa., assignor to SPS Technologies, Inc., Jenkintown, Pa.

Filed Apr. 7, 1980, Ser. No. 137,947
Int. Cl.³ B23Q *17/00*; B23P *19/04*
U.S. Cl. 29—407 **9 Claims**



1. Apparatus for tightening an assembly including a threaded fastener comprising:

driving means for imparting torque and rotation to said fastener to tighten said assembly, the torque-rotation curve and the preload-rotation curve for said assembly each having a substantially linear tightening portion;

means for supplying (1) a preload signal representative of the difference between a desired preload which is to be induced in said fastener when said assembly has been tightened to a desired degree and a selected preload within said substantially linear tightening portion of said preload-rotation curve and (2) a tension rate signal representative of the tension rate of said assembly;

torque sensing means responsive to said driving means for developing a first torque signal representative of the torque imparted to said fastener;

angle sensing means responsive to said driving means for developing an angle signal representative of the rotation imparted to said fastener;

gradient calculating means responsive to said first torque signal and said angle signal for developing a gradient signal representative of the gradient of said torque-rotation curve;

means responsive to said preload signal, said tension rate signal and said gradient signal for developing a second torque signal representative of the product of said preload difference and said gradient divided by said tension rate;

means for supplying a third torque signal representative of the torque which induces said selected preload;

means responsive to said second torque signal and said third torque signal for developing a fourth torque signal representative of a tightening torque equal to the sum of the torques represented by said second torque signal and said third torque signal;

comparison means responsive to said first torque signal and said fourth torque signal for comparing said torque imparted to said fastener with said tightening torque and for developing a control signal when said torque imparted to said fastener is equal to said tightening torque;

and control means for supplying said control signal to said driving means to stop said driving means from imparting torque and rotation to said fastener.

7. A method for tightening an assembly including a threaded fastener to which torque and rotation are imparted to induce a predetermined preload in the fastener when said assembly has been tightened to a desired degree, the torque-rotation curve and the preload-rotation for said assembly each having a substantially linear tightening portion, said method comprising the steps of:

establishing said predetermined preload;

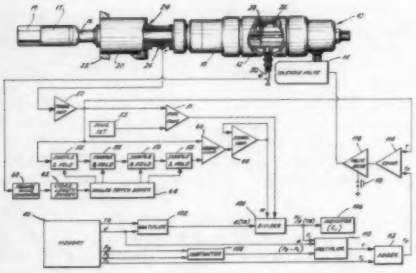
establishing the preload for said fastener at the onset of said substantially linear tightening portion of said preload-rotation curve;
establishing the tension rate of said assembly;
imparting torque and rotation to said fastener;
calculating the gradient of said torque-rotation curve;
identifying said onset of said substantially linear tightening portion of said torque-rotation curve;
measuring the torque imparted to said fastener at said onset of said substantially linear tightening portion;
calculating a tightening torque equal to said torque imparted to said fastener at said onset of said substantially linear tightening portion of said torque-rotation curve plus the product of the difference between said preloads and said gradient divided by said tension rate;
determining when said torque imparted to said fastener is equal to said tightening torque;
and discontinuing application of torque and rotation to said fastener when said torque imparted to said fastener is equal to said tightening torque.

4,375,121

DYNAMIC FRICTION INDICATOR AND TIGHTENING SYSTEM USABLE THEREWITH

Jerry A. Sigmund, Merion Station, Pa., assignor to SPS Technologies, Jenkintown, Pa.

Filed Apr. 7, 1980, Ser. No. 137,948
Int. Cl.³ B23Q *17/00*; B23P *19/04*
U.S. Cl. 29—407 **22 Claims**



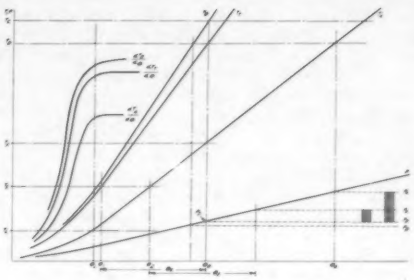
1. A system for determining a value representative of the coefficient of friction in a threaded joint assembly comprising:
means for tigtening the joint assembly;
gradient calculating means for developing a gradient signal representative of the slope of a torque-rotation curve which could be plotted for the joint assembly being tightened;
first means for providing a signal representative of the product of the pitch diameter of a threaded fastener member of the joint assembly and the tension rate of the joint assembly; and
computing means responsive to said gradient signal and said first means signal for computing the value representative of the coefficient of friction in the joint assembly and providing an output signal indicative thereof.

4,375,122

METHOD AND APPARATUS FOR TIGHTENING THREADED FASTENER ASSEMBLIES

Jerry A. Sigmund, Merion Station, Pa., assignor to SPS Technologies, Inc., Jenkintown, Pa.

Filed Apr. 7, 1980, Ser. No. 137,949
Int. Cl.³ B23Q *17/00*; B23P *19/04*
U.S. Cl. 29—407 **17 Claims**



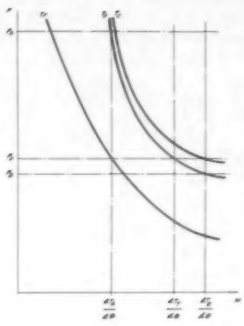
1. Apparatus for tightening an assembly including a threaded fastener to a desired preload comprising:
driving means for imparting torque and rotation to the fastener to tighten the assembly;
torque sensing means associated with said driving means for developing a first torque signal representative of the torque imparted to the fastener;
angle sensing means associated with said driving means for developing an angle signal representative of rotation imparted to the fastener;
gradient calculating means responsive to said first torque signal and said angle signal for developing an instantaneous gradient signal representative of the slope of the tightening region of a torque-rotation curve for the joint assembly being tightened;
means for supplying a second torque signal representative of a theoretical tightening torque of a theoretical torque-rotation curve for the assembly required to induce the desired preload in the fastener when the assembly has been properly tightened;
means for adjusting said second torque signal in response to said instantaneous gradient signal; and
control means responsive to said adjusted second torque signal for causing said driving means to cease to impart torque and rotation to the fastener.

12. A method for tightening an assembly including a threaded fastener to a desired preload comprising:
establishing a theoretical tightening torque of a theoretical torque-rotation curve for the assembly required to induce the desired preload in the fastener when the assembly has been properly tightened;
imparting torque and rotation to said fastener to tighten said assembly;
calculating the instantaneous gradient of the tightening region of a torque-rotation curve for the joint assembly being tightened;
adjusting said theoretical tightening torque in response to said instantaneous gradient;
controlling said torque and rotation imparted to said fastener according to said adjusted theoretical tightening torque and ceasing to impart said torque and rotation to said fastener when said torque imparted to said fastener is equal to said adjusted theoretical tightening torque.

4,375,123
METHOD AND APPARATUS FOR TIGHTENING THREADED FASTENER ASSEMBLIES

Andrew L. Ney, Lafayette Hill, Pa., assignor to SPS Technologies, Inc., Jenkintown, Pa.

Filed Apr. 7, 1980, Ser. No. 137,950
Int. Cl.³ B23P 19/06
U.S. Cl. 29—407 9 Claims



9. A method for tightening an assembly including a threaded fastener to which torque and rotation are imparted to induce a desired preload when said assembly has been tightened to a desired degree, the actual torque-rotation curve for said assembly having a non-linear tightening portion followed by a substantially linear tightening portion, said method comprising:

selecting a plurality of possible torque-rotation curves for said assembly;

determining the gradients of the substantially linear tightening portions of said plurality of possible torque-rotation curves;

establishing the tightening torques required to induce a desired preload in said fastener when said fastener is tightened according to said possible torque-rotation curves, one such tightening torque being associated with each gradient of said substantially linear tightening portion of said possible torque-rotation curves;

imparting torque and rotation to said fastener;

calculating the gradient of said substantially linear tightening portion of said actual torque-rotation curve;

comparing said calculated gradient of said substantially linear tightening portion of said actual torque-rotation curve with said gradients of said substantially linear tightening portions of said plurality of possible torque-rotation curves and determining which of said gradients of said substantially linear tightening portions of said plurality of possible torque-rotation curves is closest in magnitude to said gradient of said calculated substantially linear tightening portion of said actual torque-rotation curve;

deriving the tightening torque associated with said gradient closest in magnitude to said calculated gradient of said substantially linear tightening portion of said actual torque-rotation curve;

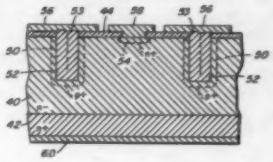
determining when said torque imparted to said fastener is equal to said derived tightening torque;

and ceasing to impart torque and rotation to said fastener when said torque imparted to said fastener is equal to said derived tightening torque.

4,375,124
POWER STATIC INDUCTION TRANSISTOR FABRICATION

Adrian I. Cogan, Waltham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 12, 1981, Ser. No. 320,238
Int. Cl.³ H01L 21/225
U.S. Cl. 29—571 4 Claims



1. A method for forming a gate-source structure for a recessed-gate static induction transistor, said method comprising the steps of:

growing a high resistivity epitaxial silicon layer on a semiconductor substrate;

growing a silicon dioxide layer over said epitaxial layer;

etching parallel windows through said silicon dioxide layer at predetermined gate and source locations;

masking said source windows and etching recessed gate grooves in said epitaxial layer, said gate grooves having depth substantially greater than width;

removing said source window masking;

depositing a doped polysilicon layer in said gate grooves, in said source windows and on said silicon dioxide layer, said deposit continuing until the surface of said polysilicon layer is substantially planar;

removing said doped polysilicon layer to open said source windows and to form gate contact regions, said doped layer removal accomplished using relaxed registration photolithography;

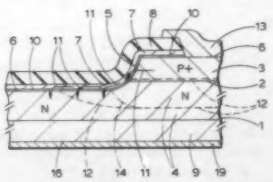
forming source regions in said epitaxial layer at source window locations; and

depositing metal in said source window and over said gate contact regions to form gate and source electrodes, said metal depositing accomplished using relaxed registration photolithography.

4,375,125
METHOD OF PASSIVATING PN-JUNCTION IN A SEMICONDUCTOR DEVICE

Stephen W. Byatt, Manchester, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,306
Claims priority, application United Kingdom, Mar. 7, 1980, 8007853
Int. Cl.³ H01L 21/205, 29/34
U.S. Cl. 29—588 9 Claims



1. A method of manufacturing a semiconductor device being reversely biased in at least one operating condition comprising the steps of

terminating a p-n junction at a surface of a semiconductor body,

baring said surface at said p-n junction of all naturally formed insulating layers,

subjecting said bared surface to a conversion treatment at a temperature above room temperature, said conversion treatment converting said semiconductor body into a thin layer of insulating material having a thickness of less than 100 Å (0.01 micron) which is small enough to enable conduction between said semiconductor body and a passivating layer to be formed thereon and large enough to keep said conduction so low that the width of the depletion layer associated with a reversely-biased p-n junction increases along said surface, and

forming a passivating layer of semi-insulating material on said layer of insulating material.

4,375,126
DEVICE FOR MOUNTING PARTS ON PRINTED CIRCUIT BOARDS

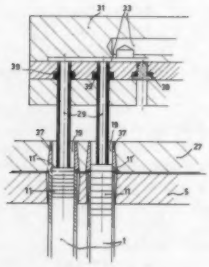
Helmut Düll, Heide, and Wilhelm Schreihage, Hartenholm, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 27, 1980, Ser. No. 181,607

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935081

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—740 **12 Claims**



1. Apparatus for mounting plate-shaped electrical parts on a printed circuit board, which comprises a plurality of hollow tubular magazines each containing a stack of said parts, said magazines being positioned in a manner corresponding to the intended arrangement of the parts on the printed circuit board; a transfer plate positioned opposite one end of each magazine; and a plurality of suction tubes removably mounted in said transfer plate for transferring the parts and extending toward the magazine ends, the number of said suction tubes corresponding to the number of said magazines, said suction tubes being interchangeable to enable the extended length of each tube to be varied as required.

4,375,127
METHOD OF ASSEMBLING AND SEALING AN ALKALI METAL BATTERY

Perry E. Elkins; Jerry E. Bell, both of Santa Ana; Richard A. Harlow, Newport Beach, and Gordon G. Chase, San Diego, all of Calif., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 5, 1980, Ser. No. 184,586

Int. Cl.³ H01M *10/39, 2/08, 10/38*

U.S. Cl. 29—623.5 **8 Claims**

1. A method of initially assembling and then subsequently hermetically sealing a container portion of an alkali metal battery to a ceramic portion of an alkali metal battery which comprises:

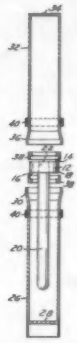
forming a sealing surface on the container portion of the alkali metal battery;

forming a sealing surface on the ceramic portion of the alkali metal battery;

bringing said sealing surface of the container portion of the alkali metal battery in juxtaposition with said sealing surface of the ceramic portion of the alkali metal battery;

interposing between said juxtaposed sealing surfaces a material which at operational temperatures of the alkali metal battery will diffuse into sealing relationship with the container portion and the ceramic portion of the alkali metal battery;

applying a pressure between said juxtaposed sealing surfaces to cause said interposed material to be brought into intimate physical contact with said juxtaposed sealing surfaces;



applying a temporary sealing material over said juxtaposed sealing surfaces and said material interposed therebetween, said sealing material being one which (a) at room temperature will provide a seal against a flow of alkali metal battery reactants therethrough, and (b) at operational temperatures of such an alkali metal battery will degrade to form electrically nonconductive products;

heating said sealing surfaces, said interposed material and said temporary sealing material to an operational temperature for an alkali metal battery whereby said interposed material diffuses into said juxtaposed surface to form a hermetic seal therebetween and said temporary sealing material degrades to form electrically nonconductive products; and

maintaining said applied pressure between said juxtaposed sealing surfaces to maintain said hermetic seal which has been formed therebetween by said interposed material.

4,375,128
MANUAL KEYWAY PUNCHING TOOL

Wayne Linquist, Rockford, Ill., assignor to Ex-Cell-O Corporation, Troy, Mich.

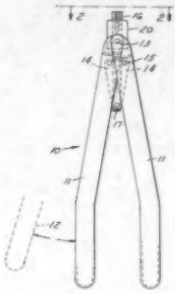
Continuation of Ser. No. 59,868, Jul. 23, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,965

Int. Cl.³ B26B *13/00*

U.S. Cl. 30—242 **1 Claim**

1. A keyway cutting tool comprising a pair of elongated handles, pivot means connecting said handles together, linkage means including a pair of links, means pivotally connecting the links together at one end of their ends with the other of their ends being pivotally connected to a respective one of said handles, punch means having a pair of keyway cutter extensions extending longitudinally therealong adjacent one end and means adjacent the other end connecting the punch means to said link pivot means so that said punch means can be moved by bringing the handles toward or away from one another, said cutter extensions each having a recessed portion intermediate

its longitudinal length with a cutting edge formed thereon adjacent said recess and being of different size to cut different size keyways, die means connected to said handle pivot means in stationary relation relative to said punch means, said die means having a bore for slidably receiving said punch means with said keyway cutter extensions extending out of said bore at the end of said die means remote from said handle pivot means when said handles are open and said die means having a



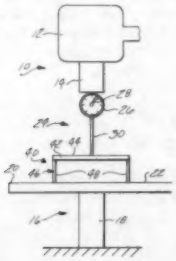
surface on said remote end thereof for engaging and maintaining a workpiece thereon during cutting, said bore having a pair of different size recesses extending longitudinally therealong for receiving said longitudinally extending keyway cutter extensions when said handles are closed to move said punch means into said die means and cut the workpiece, and stop means disposed between said punch means and die means for controlling the extent of movement of said punch means relative to said die means when said handles are opened and closed.

4,375,129

INDICATING PLATFORM FOR MACHINE TOOLS

Thomas H. Dunk, 3400 Pleasant Valley Rd., Brighton, Mich. 48116

Filed May 27, 1980, Ser. No. 153,165
Int. Cl.³ B27G *23/00*
U.S. Cl. 33—185 R **4 Claims**



1. In a machine tool having a work table, a spindle attached to a head portion and a dial indicator attached to the spindle for measuring the degree of perpendicularity of the head portion with respect to the work table, the improvement comprising:

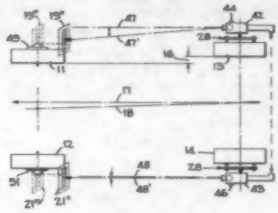
an indicating platform including a first member having a planar top surface and means, attached to said first member, for supporting said first member a predetermined distance above and substantially parallel to the surface of said work table: said first member including a centrally-disposed aperture such that said top surface of said first member is disposed around objects mounted on the work table, said aperture defining an outer annular surface in said first member engageable by said dial indicator means.

4,375,130

METHOD FOR ADJUSTING THE TOE OF THE STEERABLE WHEELS ON A VEHICLE RELATIVE TO THE AVERAGE ROLLING DIRECTION OF THE VEHICLE NONSTEERABLE WHEELS

Melvin H. Lill, San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed May 8, 1981, Ser. No. 261,440
Int. Cl.³ G01B *11/275*
U.S. Cl. 33—228 **20 Claims**



1. A method for use with an alignment system including toe measurement instruments mounted on a vehicle having steerable and non-steerable vehicle wheel pairs for setting the toe of the steerable wheel pair relative to the average rolling direction of the non-steerable wheel pair,

comprising the steps of mounting the toe measuring instruments on the non-steerable wheel pair,

adjusting the alignment between each of the toe measuring instruments and one of a pair of symmetrically located points relative to the center point between the steerable wheels while observing said alignment to be substantially the same on each side of the vehicle,

fixing the adjustments in place,

moving and mounting the toe measuring instruments to the diagonally opposite steerable wheels of the vehicle,

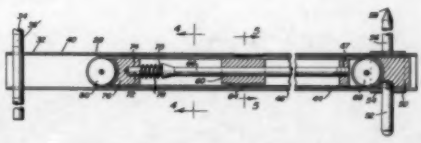
and adjusting the steering direction of the steerable wheel pair so that the alignment between each of the toe measuring instruments and one of another pair of symmetrically located points relative to the center point between the non-steerable wheels is substantially the same on each side of the vehicle.

4,375,131

VEHICLE FRAME DATUM LINE REFERENCE SYSTEM

Davis R. Jarman, 612 Ward Dr., and Virgil H. Hinson, 206 Fairway Oaks Dr., both of Brunswick, Ga. 31520

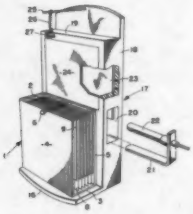
Filed May 14, 1980, Ser. No. 150,676
Int. Cl.³ G01B *5/25*
U.S. Cl. 33—288 **4 Claims**



1. A vehicle frame datum line reference gauge, said gauge including an elongated horizontal body having first reference locations means at one end, second reference location means carried by and shiftable longitudinally of the body, scale means operative to indicate changes in the spacing, longitudinally of said body, between said first and second reference location

means, said scale means including indicator means for indicating change distances equal to twice the actual change distance, said body being tubular and the central portion thereof having a guide block stationarily mounted therein, an elongated longitudinal support member slidably supported from said guide block for longitudinal shifting relative to said body, first pulley means journaled from the end of said support member adjacent said one body end, second pulley means journaled from the end of said support member adjacent the other body end, and an elongated measure tape trained about said pulleys and anchored relative to said guide block, said tubular body having a window opening formed therein with which said measure tape is registered.

4,375,132
SLIDE FILING AND RETRIEVAL SYSTEM
Michael Tradowsky, 10370 Blair La., Kirtland, Ohio 44094
Filed May 21, 1981, Ser. No. 265,850
Int. Cl.³ G02B *27/02*
U.S. Cl. 40—361 **3 Claims**

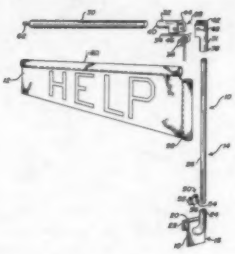


1. A slide filing and retrieval system comprising a portable book-like file having a series of vertically disposed rectangular slide carrier sheets therein; each carrier sheet having pockets for selective insertion or removal of slides thereinto or therefrom; said file having hinge means supporting said sheets for selective swinging movement in a vertical plane to a swung-out position from said file providing access to the pockets thereof; said file having a series of interleaf sheets non-swingably supported in said file; said interleaf sheets being interleaved between said slide carrier sheets to facilitate swinging movement of the latter out of and into said file.

4,375,133
JOGGER'S IDENTIFICATION TAG
Eileen W. Fenrich, 8409 Fenwood Dr., and Elizabeth S. Garcia, 7031 Flax St., both of Springfield, Va. 22152
Filed Mar. 25, 1981, Ser. No. 247,549
Int. Cl.³ G09F *21/02*
U.S. Cl. 40—586 **3 Claims**

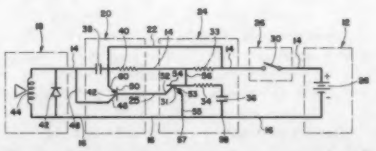
1. An identification tag holder for attachment to clothing during athletic activities comprising an elongated cloth pouch having an opening at at least one end for removably receiving an information bearing insert and first and second two-part removable securing means, one part having a pin extending through said pouch at respective opposite ends and a releasable second part for locking to said first part for removably attaching said tag to any desired place on said clothing, the area of the pouch between said securing means being unsecured to said article of clothing.

4,375,134
EMERGENCY KIT
Floyd R. Sheetz, 403 Rutherford Rd., Harrisburg, Pa. 17107
Filed May 7, 1981, Ser. No. 261,451
Int. Cl.³ G09F *21/04*
U.S. Cl. 40—591 **2 Claims**



1. An emergency kit comprising a container and a signaling device adapted to be stored in said container, said signaling device being adapted to be completely removed from said container so that it may be assembled into operative condition, said signaling device comprising a first tubular member, window bracket means adapted to be removably mounted on one end of said first tubular member, latch means comprising a pair of parallel tubes, one of said tubes being slidably mounted on said first tubular member, a second tubular member having a tab on one end thereof, hinge means connecting said first tubular member with said second tubular member, the second tube of said latch means adapted to receive said tab on said second tubular member to hold said signaling device in collapsed position, a spring in said hinge means which biases said second tubular member to a position substantially perpendicular to said first tubular member when said latch means is slid along said first tubular member, and a flag supported on said tubular members.

4,375,135
APPARATUS AND METHOD FOR SIGNALING UNSAFE HANDLING AND OPTIMUM FIRING OF A SHOULDER WEAPON
Lawrence H. Wigger, 6750 S. 73rd E. Ave., Tulsa, Okla. 74133
Filed Mar. 4, 1981, Ser. No. 240,276
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—1 A **22 Claims**



1. A method of signaling unsafe handling and optimum firing of a shoulder weapon by monitoring the attitude of the weapon comprising the steps of:

a. attaching to the weapon a means for intermittently emitting an audible signal when the weapon reaches a prede-

termined angular position with respect to a horizontal plane;

b. moving the weapon to at least the predetermined angular position activating the audible signal; and

c. determining whether or not said moving step (b) was intentional in order for continuing to move the weapon to a shooting posture with respect to a hunter, or unintentional indicating that the weapon is being handled unsafely and should be moved from the predetermined angular position.

4,375,136

MUZZLE CONTROL THROUGH APPLICATION OF TORQUE DERIVED FROM RECOIL ENERGY

John S. Pedgonay, 53 E. Bel Air Ave., Aberdeen, Md. 21001

Filed Jul. 30, 1981, Ser. No. 288,533

Int. Cl.³ F41C *21/22*

U.S. Cl. 42—75 B **15 Claims**

1. A system for applying a torque to a rifled gun tube muzzle for countering torque applied in a first direction about the long axis of the gun tube to said gun tube muzzle by projectile firing therefrom, the gun tube slidably supported in a cradle for recoil, comprising: a torque member having first and second ends, means connecting the torque member first end to the gun tube adjacent the gun tube muzzle, and means on the cradle and on the torque member for applying torque to the torque member second end in a second direction counter to said first direction, upon said recoil.

4,375,137

FISHING LURE HOLDER

Ralph Chitwood, Nampa, Id., assignor to Betty Louise C. Erberich, Caldwell; Wilbur T. Chitwood, Pocatello and Robert W. Chitwood, Caldwell, all of, Id.

Filed Dec. 16, 1980, Ser. No. 216,848

Int. Cl.³ A01K *97/06*

U.S. Cl. 43—57.1 **6 Claims**

1. A fishing lure holder comprising: elongated generally rectangular flat plate means against which a fishing lure may be securely retained, the plate means having opposed substantially planar sides throughout, clip means fixedly secured to a central portion of one side of the plate means, and further clip means fixedly secured proximate end portions of the opposite side of the plate means, said clip means and further clip means providing spring-biased retention and being fixedly secured to said plate means and serving to retain said fishing lure against said plate means, all of said clip means paralleling the short edges of the plate means with the central clip means opening in an opposite direction to the end clip means.

4,375,138

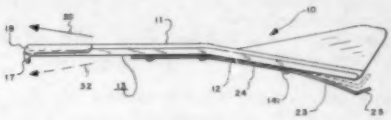
FREE FLIGHT MANEUVERING TOY AIRPLANE

John F. Chotia, deceased, late of Ogden, Utah, and by Susan M. Bowman, personal representative, 588 East on 3450 North, Ogden, Utah 84404

Filed Jun. 25, 1981, Ser. No. 277,144

Int. Cl.³ A63H *27/00*

U.S. Cl. 46—79 **8 Claims**



1. A toy airplane adapted to be launched into unpowered free flight, comprising:

a rearward wing of elastic material adapted for flexure transversely to the direction of flight in response to aerodynamic forces thereon, and having a trailing edge and a leading edge both transverse to the direction of flight, and a trailing elevator portion continuous the full width of the trailing edge, being angled rearwardly upwardly therefrom, so that the resultant aerodynamic force on said wing is downwardly directed at all flight velocities;

a forward wing extending downwardly and forwardly from the leading edge of the rearward wing and adapted to be substantially rigid during flight;

stabilizer fin means; and

a rigid elongate central backbone member; and wherein

the forward rigid and the rearward flexible wing are integral, being of a single sheet of elastic material, the rigid wing comprising a forward portion of the sheet secured fixedly to the backbone, and the flexible wing comprising a rearward portion of the sheet being free to bend downwardly from the backbone.

4,375,139

TOY ARRANGEMENT WITH INDEPENDENTLY ROTATABLE WHEEL MEANS

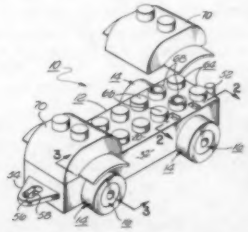
Yasushi Chatani, Tokorozawa, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,564

Claims priority, application Japan, May 28, 1981, 56-76522[U]

Int. Cl.³ A63H *17/26, 33/00*

U.S. Cl. 46—221 **11 Claims**



1. An improved rolling toy arrangement comprising, in combination:

a body means, said body means having:

an upper wall; and

a plurality of wall members coupled to said upper wall and dependent therefrom, and defining a plurality of retaining apertures; and

said wall members comprising: inner wall portions; and a

pair of oppositely disposed side wall portions coupled to said inner wall portions, and extending a predetermined distance outwardly therefrom; and each of said side wall portions in each of said plurality of retaining apertures having a tab receiving shoulder thereon;

a plurality of mounting block means, each of said mounting block means having:

a retainer member; and

an axle member coupled to said retainer member and extending outwardly therefrom;

said retainer member in one of said plurality of said retaining apertures of said body means, and said retaining member having:

a pair of spaced apart tab portions and each of said tab portions having an engaging surface engaging said tab receiving shoulders of said side wall portions of said retaining apertures for retention of said mounting block means in said retaining apertures of said body means; and

said pair of tab portions of said mounting block means resiliently resisting deformation toward each other; and

said axle member tubular in cross section and having:

a substantially cylindrical outer surface; and

an inner surface defining a hub receiving aperture extending therethrough; and

said axle member having a head receiving shoulder at said retainer member;

a hub means having:

a disc-like flange member; and

an insertion member extending from said flange member, and said insertion member having:

a shaft portion having a predetermined outer dimension; and

a headed portion spaced from said flange member, and said headed portion having at least:

an engagement section means thereof having a dimension greater than said predetermined outer dimension of said shaft portion of said insertion member; and

said insertion member of said hub means positioned in said hub receiving aperture of said mounting block means and said engagement section means of said headed portion engaging said head receiving shoulder of said axle member of said mounting block means for retention of said hub means therein; and

a wheel means rotatably mounted on said axle member of said mounting block means and having:

a flange engaging surface for engaging said disc-like member of said hub means for retaining said wheel means on said axle member of said mounting block means.

4,375,140

DOOR OPENER FOR BUS AND THE LIKE

William F. Blair, Midlothian, and Patrick Downey, Fort Worth, both of Tex., assignors to Excell Machine Company, Inc., Mansfield, Tex.

Filed Apr. 23, 1981, Ser. No. 256,773

Int. Cl.³ E05C 7/06

U.S. Cl. 49—108 **6 Claims**

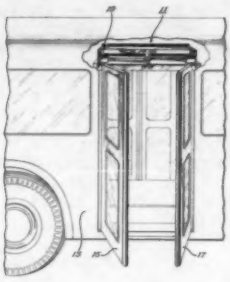
1. A door opener for a bus or the like having a pair of doors pivotally mounted on respective door shafts on each side of a door opening for being pivoted opened and closed as desired, comprising:

a. respective door bell cranks connected with the respective door shafts so as to effect the desired rotation thereof so to open and close the doors, respectively;

b. a central bell crank journalled for pivotal movement for respectively opening and closing the doors and having double throw arms, one for each door;

c. a pair of respective linking arms connecting respectively said central bell crank with a respective door bell crank; at least one of said linking arms including a pair of telescopingly engaging members for effecting reciprocal movement of one with respect to the other and a biasing means for maintaining a noise-abating force on the doors;

d. motor means and interconnection means for effecting controlled pivotal rotation of said central bell crank; and



e. a safety override mounted adjacent said central bell crank and adapted to override and disengage said motor means and said interconnection means to allow manual opening of said doors in the event of an emergency.

4,375,141

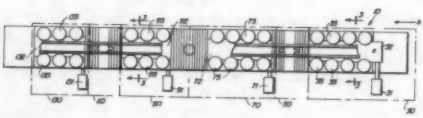
BEVELING APPARATUS

Righetti Gaetano, Pesaro, Italy, assignor to Hoyne Industries, Inc., Rolling Meadows, Ill.

Filed Jul. 9, 1980, Ser. No. 167,207

Int. Cl.³ B24B 9/10

U.S. Cl. 51—3 **24 Claims**



1. An apparatus for grinding the edges of a workpiece having at least two pairs of parallel sides comprising:

a conveyor for transporting the workpiece through a series of sequential work stations;

first work station means for grinding the edges of a first pair of parallel sides of the workpiece when positioned parallel to the direction in which the workpiece is transported;

first means for lifting the workpiece from the conveyor, rotating the workpiece to position a second pair of parallel sides in a direction parallel to the direction in which the workpiece is transported, and lowering the workpiece back down to the conveyor;

second work station means for grinding the edges of the second pair of parallel sides;

third work station means for polishing the edges of the second pair of parallel sides;

second means for lifting the workpiece from the conveyor, rotating the workpiece to position the first pair of parallel sides in a direction parallel to the direction in which the workpiece is transported, and lowering the workpiece back down to the conveyor; and

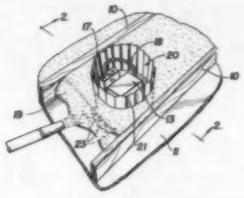
fourth work station means for polishing the edges of the first pair of parallel sides.

4,375,142

GUARD FOR ISOLATING RECESSED CEILING LIGHTS FROM COMBUSTIBLE INSULATION

Gerald L. McDonald, 2706 Blaine Dr., Chevy Chase, Md. 20015

Filed Mar. 14, 1978, Ser. No. 886,467
Int. Cl.³ E04F 19/02
U.S. Cl. 52—28 7 Claims



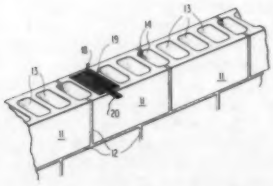
1. A guard for placement in surrounding relationship to a recessed light fixture in an insulated ceiling comprising a substantially vertical sleeve body formed of thin gauge sheet metal of sufficient height to extend well above the maximum depth of insulation in a ceiling, said sheet metal being coated on at least the outer side of the sleeve body, the sleeve body being open at its top and defining a cooling and ventilating chamber around the recessed light fixture, and an anchoring element on the lower end of the sleeve body projecting approximately perpendicular to the axis of the sleeve body and adapted for stapling to a ceiling structure, said sheet metal being pre-creased transversely at a plurality of equidistantly spaced points for ready formability, said anchoring element comprising a plurality of circumferentially spaced tabs between pre-cut slits in one edge of the metal sheet at each crease, and fasteners securing said sheet into said sleeve body.

4,375,143

MORTAR STOP FOR HOLLOW BLOCK FOUNDATION WALLS WITH ATTACHED LOCATOR TAB

Joseph F. Godlewski, 13208 Second Ave., Cresaptown, Md. 21502

Filed Oct. 16, 1980, Ser. No. 197,559
Int. Cl.³ E04B 2/14
U.S. Cl. 52—98 5 Claims



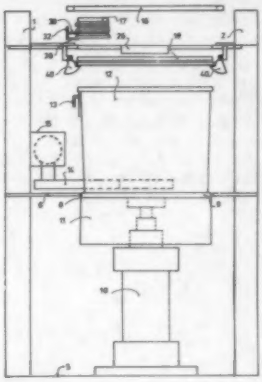
1. A mortar stop for foundation walls constructed with hollow building blocks having vertical passages, said mortar stop comprising a thin mesh body portion of sufficient size to cover at least one passage of a building block, a comparatively small locator tab integrally attached to a medial portion of one end of the body portion and extending in the same plane of the body portion, said locator tab having a substantially narrower width than the width of said body portion and being of a length to project outwardly from one face of a wall having the mortar stop installed therein, and at least one weakened transverse separation line across the width of the locator tab and adapted for positioning substantially in the plane of the said one face of the wall whereby the locator tab can be easily chopped off by a mason's trowel.

4,375,144

LID MOUNTING APPARATUS

Knut N. A. Möller, Börgagardsvägen 14, Halmstad, Sweden

PCT No. PCT/SE80/00055, § 371 Date Oct. 14, 1980, § 102(e) Date Oct. 14, 1980, PCT Pub. No. WO80/01788, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 28, 1980, Ser. No. 198,144
Claims priority, application Sweden, Mar. 1, 1979, 7901849
Int. Cl.³ B65B 7/28
U.S. Cl. 53—309 9 Claims



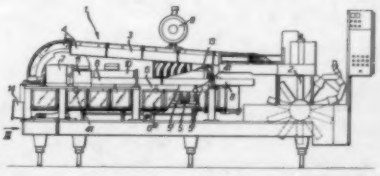
1. An apparatus for mounting lids on containers characterized in that a lid magazine having a vertical axis is located above a container hoist, that first means is disposed between the lid magazine and the container hoist and includes opposed movably members centered on said axis for separating one lid from the lid magazine and retaining the remaining lids in the magazine while allowing downward release of the separated lid, and second means including opposed movable members centered on said axis in the path of movement of the separated lid and forming a biottom in the lid magazine, and an abutment with a depending boss against which the container with the separated lid is pressed by means of the container hoist for final mounting of the lid.

4,375,145

PACKAGING, PARTICULARLY ASEPTIC PACKAGING OF ASEPTIC PRODUCTS IN CARTONS

Richard W. E. Mosse, London, and Kaare B. Vatne, Ware, both of England, assignors to Novus Corp. N.V., Curacao, Netherlands Antilles

Filed Dec. 20, 1979, Ser. No. 105,541
Int. Cl.³ B65B 31/02
U.S. Cl. 53—425 16 Claims



1. An aseptic packaging method comprising the steps of:
introducing cartons into an aseptic chamber forming part of an aseptic packaging machine of elongate form;
causing said cartons to be received in a closely restrained manner in respective pockets of an endless conveying means totally within said aseptic chamber;

causing said conveying means to displace its pockets and thus said cartons along a path in said chamber including an advance leg and a return leg each extending along the machine; and

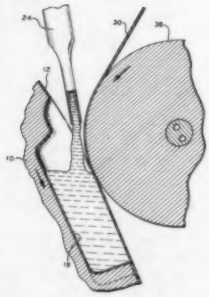
sterilizing the interiors of said cartons to render said interiors aseptic, feeding a product into said cartons, and sealingly closing said cartons, all while said cartons are on said path, said sterilizing step comprising irradiating said interior with bactericidal radiation over at least a major portion of the length of said advance leg, and said closing step including folding parts of said cartons.

4,375,146

CONTINUOUS ROTARY MACHINE AND METHOD FOR FORMING, FILLING, AND SEALING PACKAGE OF LAMINATED SHEET MATERIAL

Yun H. Chung, Rossford, Ohio, assignor to International Automated Machinery, Inc., Perrysburg, Ohio

Division of Ser. No. 47,203, Jun. 11, 1979, Pat. No. 4,271,739.
This application Mar. 27, 1981, Ser. No. 248,497
Int. Cl.³ B65B *47/02, 47/10*
U.S. Cl. 53—453 **9 Claims**



1. A method of packaging a fluid product including the steps of:

(a) continuously forming a plurality of spaced apart cavities in a first web of thermoplastic film material from a supply of said material, each of the cavities having a sealing edge along the periphery thereof;

(b) causing the formed web to travel in a path downwardly inclined from the horizontal;

(c) directing a second flat web of thermoplastic material to progressively cover and sealingly engage the edges of the cavities in the first web to form a package having a predetermined interior volume; and

(d) simultaneously with step (c), progressively filling the cavities in the first web with the desired volume of fluid product no greater than the predetermined volume of the package while simultaneously sealing said second web to the edges of said cavities.

4,375,147

BRIDOON BIT

Ulrich Conrad, Hans-Am-Ende-Weg 23, 2862 Worpswede, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 140,851
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915573
Int. Cl.³ B68B *1/06*
U.S. Cl. 54—8 **9 Claims**

1. A bridoon bit comprising a bar including a center segment and two lateral end portions, each of the lateral end portions having an eyelet through each of which there extends a ring connecting with the bridoon, the improvement comprising a thickened center segment (**11**) with a curved lateral axis and having soft transitions (**10, 12**) to the end portions (**8, 9**) on either side of the center segment, said portions being curved in a direction reverse to the curvature of the center segment, the

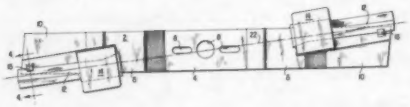
cross-section (**22**) of the thickened center segment being substantially elliptical and comprising a continuous curve devoid of any edge formation, the longer axis thereof being transverse to the axis of the eyelets (**6, 7**) on both sides.

4,375,148

MOWER BLADE

Carl E. Beck, 670 Merritt Dr., Mobile, Ala. 36609

Filed Jan. 15, 1982, Ser. No. 339,773
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—295 **11 Claims**



1. A blade for a rotary mower having a shaft which is rotatable in a fixed direction, the blade comprising:

(a) a base member

(b) means for removably mounting the base member on the rotatable shaft, and

(c) means for removably securing cutting means to said base member so that a cutting edge extends from the base member in the direction of rotation of the rotatable shaft, the securing means comprising (a) a yoke fixed to said base member and forming a slot for receiving a shank of said cutting means and (b) clip means fixed to said base member and forming a notch for receiving a first edge of said cutting means.

4,375,149

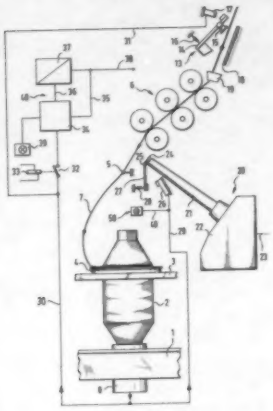
TEXTILE MACHINE SHUT-OFF DEVICE

Max Hartmannsgruber, Kirchheim, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,956
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1979, 2946031
Int. Cl.³ D01H *15/00, 11/00, 13/16*
U.S. Cl. 57—81 **9 Claims**

1. A textile machine, comprising a rotatably supported wind-up bobbin, a first electric motor drivingly coupled to said

wind-up bobbin, a rotatably supported supply bobbin which supplies a thread to said wind-up bobbin, drive means for effecting rotation of said supply bobbin, comparator means for sensing a parameter of the electric current supplied to said first electric motor and for comparing said parameter to a reference



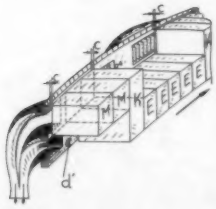
value, switch means responsive to said comparator means and cooperable with said drive means for automatically interrupting said rotational driving of said supply bobbin by said drive means in response to a change in said sensed parameter relative to said fixed value.

4,375,150

CONTINUOUS IGNITION TURBO MOTOR

Paraskeyas Nikiforakis, Moustoxidi and II Therianou Sts., Athens, Greece

Filed Jun. 24, 1980, Ser. No. 162,427
Claims priority, application Greece, Sep. 5, 1979, 63440
Int. Cl.³ F02C 3/14
U.S. Cl. 60—39.34 **7 Claims**



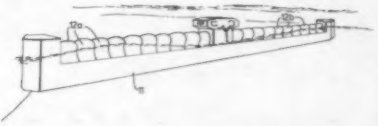
1. In an internal combustion engine, the combination of a plurality first, second and relation combustion chambers, said combustion chambers being annularly disposed and arranged in groups and said groups being staggered radially so that the groups lie in two successive arcs offset from one another there being a plurality of successive first chambers defining a first group and a plurality of successive second chambers defining a second group, each of said combustion chambers having an opening and all of said openings defining a single plane, each of said relation chambers overlapping the end ones of a successive pair of first and second groups of chambers to interconnect successive groups so as to transmit combustion gases from one group to another, means for supplying a fuel-air mixture to said combustion chambers, a distributor relatively rotatable to said combustion chambers and having a surface conforming to the plane defined by said chamber openings and closely spaced therefrom, said distributor having a plurality of zones corresponding to the staggered positions of said groups of combustion chambers, there being a plurality of slots and openings in both said zones coregistering with said combustion chamber openings so that upon relative rotation of said combustion chambers and said distributor heated and pressurized combustion gases from a constant volume combustion are transmitted from one chamber to a succeeding chamber to provide continuous ignition of fuel-air mixture within the chambers while exhausting the products of combustion from the chambers whereby a periodic operation and cooling of the two zones of the distributor occurs.

4,375,151

CONTROL IN WAVE ENERGY CONVERSION DEVICE EMPLOYING A FLEXIBLE WALLED ENCLOSURE

Michael J. French, United Kingdom Atomic Energy Authority, 11 Charles II St., London SW1Y 4QP, England

Filed Sep. 23, 1980, Ser. No. 189,915
Claims priority, application United Kingdom, Oct. 3, 1979, 7934366
Int. Cl.³ E02B 9/08; F03B 13/12
U.S. Cl. 60—398 **7 Claims**



1. A device for conversion of energy from water waves comprising an elongated enclosure having a flexible wall of impermeable material, the enclosure being divided into a plurality of compartments each containing gas, an outgoing gas conduit and a return gas conduit, each compartment being connected to the gas conduits via non-return valves arranged to permit one way passage of gas from the compartment into the outgoing gas conduit and to permit one way passage of gas from the return gas conduit into the compartment, an elongated support structure to which the flexible enclosure material is attached, the device being located for operation in water with the top of the flexible enclosure partly breaking or just below the surface so that as water waves pass along the device each compartment is subjected in turn to an external pressure alternation, gas being pumped when the external pressure is high from the compartment into the outgoing gas conduit and gas returning, when the external pressure is low, from the return gas conduit into the compartment, energy conversion means for producing work by expanding gas from the outgoing gas conduit into the return gas conduit, wave height sensor means for sensing wave height at at least one location along the length of the device, gas flow control means controlled by the wave height sensor means for adjusting the restriction to gas flow in the path through the said energy conversion means in predetermined dependence upon wave height sensed.

4,375,152

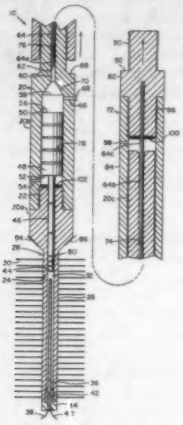
RECIPROCATING THERMAL ACTUATOR WITH HYDRAULIC MULTIPLIER

John A. Barto, 3416 Croydon Rd., Baltimore, Md. 21207

Filed Jan. 11, 1982, Ser. No. 338,285
Int. Cl.³ F03C 5/00
U.S. Cl. 60—530 **24 Claims**

1. A system for generating a linear power stroke, comprising: a housing having: a thermally expansible fluid, means for exchanging heat cyclically with said thermally expansible fluid, a first piston having a large head and a small head, first means coupling the first piston for actuation by said thermally expansible fluid upon expansion of said fluid, a second piston,

the second piston of smaller diameter than the first piston large head, second means coupling the first piston for hydraulically



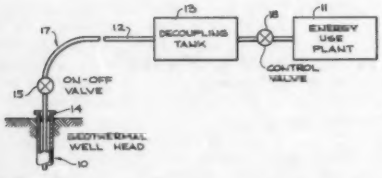
moving the second piston including hydraulic fluid in a space between the first piston and the second piston; and motion-output means associated with said second piston.

4,375,153

PROCESS AND APPARATUS FOR CONTROL OF TWO-PHASE FLOW TO GEOTHERMAL POWER PLANTS

Edward F. Wahl, III, c/o Wahl Company, 2338 Dana Ct., Claremont, Calif. 91711

Filed Mar. 26, 1981, Ser. No. 247,898
Int. Cl.³ F03G *7/04*
U.S. Cl. 60—641.2 **8 Claims**



1. A method of transmitting a two phase fluid of water and steam from a geothermal well head to an energy use plant, which comprises:

introducing the two phase fluid from the well head directly into a pipeline having substantially no flow restrictions;

conveying the two phase fluid through the pipeline to a decoupling tank adjacent the energy use plant with no pressure or rate of flow controls, substantially no change in slope, and substantially no vertical rises; and

conveying the water and steam from the decoupling tank to the energy use plant.

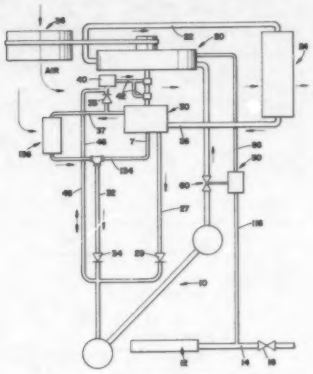
4,375,154

AIR HEATING SYSTEM

John J. Primeau, 19800 Seminole Rd., Euclid, Ohio 44117

Filed Dec. 11, 1980, Ser. No. 215,562
Int. Cl.³ F01B *31/00*; F01D *00/00*; F01K *19/00*
U.S. Cl. 60—657 **5 Claims**

1. In a self-starting, fuel-fired, air heating system including a vapor generator, a turbine, and a condenser connected in a closed circuit such that the vapor output from the generator is conducted to said turbine and then to said condenser where it is condensed and returned to said boiler, and further including an air blower means driven by said turbine for causing a flow of air over said condenser, and a condensate pump also driven by said turbine for returning the condensed vapor to the vapor generator, the improvement comprising a heat exchanger



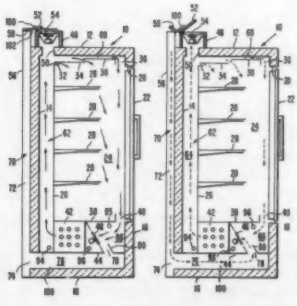
connected to receive at least a portion of the condensed fluid exiting from said pump for cooling said fluid and returning a portion of the cooled fluid to the inlet of said pump and further including a fluid flow line means connected to permit gravity flow of condensed fluid from said condenser to said vapor generator when said turbine and pump are not operating.

4,375,155

REACH-IN REFRIGERATED DISPLAY CASE WITH AMBIENT AIR DEFROST

Ronald R. Rosanio, Levittown; John J. Jud, Philadelphia, and Anthony Guaragno, Morrisville, all of Pa., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Dec. 24, 1981, Ser. No. 334,416
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—256 **17 Claims**



1. In a refrigerated display case of the air defrost type having refrigerating and defrost cycles, a display space, an air duct extending at least partially thereabout, a refrigerating coil mounted in the duct, and a primary fan also mounted in the duct and adapted for circulating air therethrough about the display space in the same direction during both the refrigeration and the defrost cycles thereof, the improvement comprising:

(a) a defrost air inlet conduit separate from and extending

alongside said duct and having an inlet in communication with the ambient atmosphere and a defrost air supply port opening into the primary air duct;

(b) an inlet damper for admitting ambient defrost air through said inlet into the conduit for flow therethrough and through the defrost air supply port into the duct and thereafter through the coil during the defrost cycles of the case; and

(c) an air exhaust damper for exhausting from the duct, into the ambient atmosphere, the air that has passed through the coil during said defrost cycles.

4,375,156

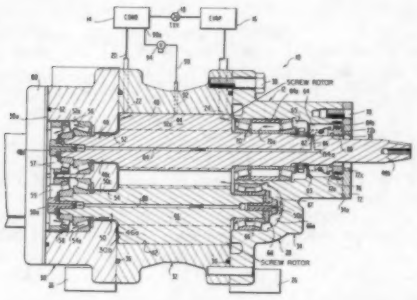
CLOSED LOOP COMPRESSED GAS SYSTEM WITH OIL MIST LUBRICATED SCREW COMPRESSOR

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Oct. 3, 1980, Ser. No. 193,496

Int. Cl.³ F25B *41/00*; F04C *18/16, 29/02*

U.S. Cl. 62—468 **4 Claims**



1. In a closed loop compressed gas system including a rotary helical screw compressor having a low pressure suction port and a high pressure discharge port and closed loop means connecting said hermetic helical screw compressor discharge and suction ports and for continuously circulating a working fluid in gaseous or vapor form between said ports by way of said closed loop means through said helical screw compressor by a pressure difference due to compression within said compressor, and wherein said compressor comprises: a hermetic housing, intersecting parallel bores within said hermetic housing, shaft borne helical screw rotors intermeshed and mounted within respective intersecting parallel bores for rotation about respective shaft axes, and defining with said housing bores a compression chamber and being open at one end to said loop means via said suction port and at the other end to said loop means via said discharge port, sealed antifirction bearing means borne by said housing for solely rotatably supporting the helical screw rotor shaft to opposite sides of said helical screw rotor and for solely taking up radial and axial thrust forces acting therein, and wherein said hermetic compressor housing and said helical screw rotor shafts define sealed chambers at respective ends of said helical screw rotors which bear antifriction bearing pack assemblies constituting said antifriction bearing means, the improvement wherein:

said closed loop system includes within said closed loop means a working fluid in gaseous or vapor form bearing a petroleum based lubricant in oil mist form having a mass weight ratio with respect to said working fluid being approximately 0.25 to 12% by weight and wherein said compressor further comprises closed loop lubricating passage means including said compression chamber and said sealed chambers housing said antifriction bearing means, passage means connecting respective sealed chambers on opposite sides of said helical screw rotors bearing said antifriction bearing pack assemblies, and discrete gaps between said rotary shaft, said helical screw rotors and said compressor housing such that the miscible oil, in mist form, is carried by the working fluid moving continuously through the working chamber and the sealed chambers bearing the anti-friction bearing pack assemblies and said closed loop lubricating passage means by working fluid compression pressure differential to facilitate oil mist lubrication of respective bearing pack assemblies, thereby eliminating the need for an oil pump, an oil sump and an oil separator.

4,375,157

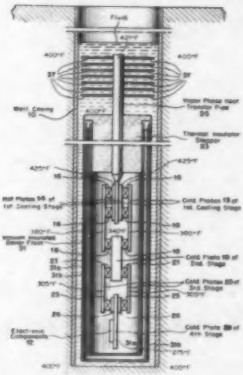
DOWNHOLE THERMOELECTRIC REFRIGERATOR

George F. Boesen, Park Ridge, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 23, 1981, Ser. No. 333,609

Int. Cl.³ F25B *19/00*

U.S. Cl. 62—514 R **6 Claims**



1. A downhole thermoelectric refrigerator for cooling electronic components located downhole in a high ambient temperature environment in a deep well containing well fluid, comprising:

a thermoelectric cooling system, positioned downhole in the deep well, having a hot plate and a cold plate and having at least one cooling stage, the cold plate serving as a mounting support for the electronic components to be cooled;

a vapor phase heat transfer pipe having lower and upper ends and extending along the axis of the well, the lower end of the pipe being thermally connected to the hot plate of said thermoelectric cooling system;

a vacuum insulated dewar flask, extending along the axis of the well, having a closed lower end and surrounding the thermoelectric cooling system, the electronic components and a major portion of the heat transfer pipe;

a thermal insulator stopper inserted in the open upper end of the dewar flask, the heat transfer pipe extending through the stopper so that an upper minor portion of the pipe is positioned above the stopper and is outside of the enclosure formed by the dewar flask and the stopper;

and heat exchanger means thermally connected to the upper portion of the heat transfer pipe and communicating with the well fluid in order to conduct heat from the pipe to the well fluid and thus to the downhole environment,

heat being pumped uphill against the temperature gradient by the thermoelectric cooling system, thereby cooling the electronic components, from a relatively low temperature on the cold plate, which low temperature is substantially less than the high ambient temperature in the downhole environment, to a relatively high temperature on the hot plate, which high temperature is greater than the ambient temperature, heat thereby being transferred by said heat

transfer pipe with relatively little temperature loss from the hot plate and from the pipe's lower end to the pipe's upper end, from which upper end said heat exchanger means transfers heat downhill with the temperature gradient to the well fluid and to the downhole environment which are established at the ambient temperature and have an infinite heat capacity, thereby functioning as a heat sink.

4,375,158

APPARATUS FOR APPLYING PATTERNS TO A PLANAR STRUCTURE

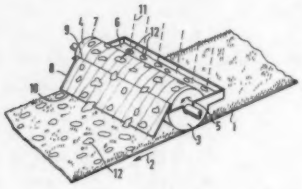
Herbert Eichmanns; Wilhelm Meyer, both of Krefeld, and Winfried Kemper, Wegberg, all of Fed. Rep. of Germany, assignors to Textilausrüstungs-Gesellschaft Schroers & Co., Krefeld, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,470

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905945; Dec. 24, 1979, 2952262

Int. Cl.³ D06B *1/06*

U.S. Cl. 68—205 R **25 Claims**



1. An apparatus for applying patterns to a planar structure, said apparatus comprising:

first means for forming a transversely extending layer of carrier liquid;

second means for transferring said layer of carrier liquid onto the surface of the planar structure in a transversely extending stream; and

a dispensing means for adding a pattern liquid to said layer of carrier liquid in individually spaced apart quantities prior to transfer of said carrier liquid to the planar structure.

4,375,159

CHANGEABLE COMBINATION TUMBLER WHEEL TYPE KEY LOCK

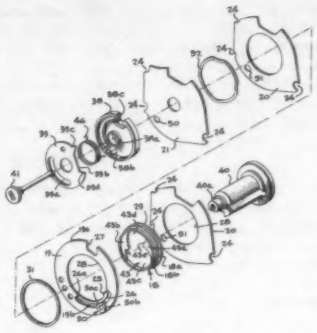
Charles G. Bechtiger, La Chaux-de-Fonds, and Jacques Peyronnet, Pully, both of Switzerland, assignors to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Jan. 28, 1981, Ser. No. 230,033

Int. Cl.³ E05B *15/14, 19/02, 29/00*

U.S. Cl. 70—366 **20 Claims**

1. A tumbler wheel type key lock operable by a key, comprising a lock case, a plurality of peripherally gated tumbler wheels supported for rotation about a common axis and each including center hub portions and rim portions encircling the hub portions, the key having an elongated shank and a plurality of wards projecting therefrom insertable into the center hub portions of the tumbler wheels, the center hub portions having shaped key apertures defining surfaces shaped to coact with the key wards to dispose the gates of said rim portions in alignment responsive to predetermined manipulation of the key and each center hub portion having a peripheral cylindrical bearing surface portion projecting beyond a side of its associated rim portion, supporting formations interposed between successive adjacent pairs of tumbler wheels defining spacers supported from the lock case outwardly of the tumbler wheel peripheries and having circular openings sized to receive the hub bearing surface portions journaled in nested relation therein to rotatably support the tumbler wheels about a common center axis, a control cam mechanism rotatable about said axis by the key inserted in the lock, a fence lever pivoted to a bolt having a depending nose adjacent the periphery of the control cam mechanism and a fence normally spaced



above the tumbler wheel peripheries, and the control cam mechanism having means to link with said fence lever for retracting the bolt at a predetermined position when the tumbler wheel gates are positioned to receive the fence.

4,375,160

MANUFACTURE OF SEAMLESS STEEL TUBE

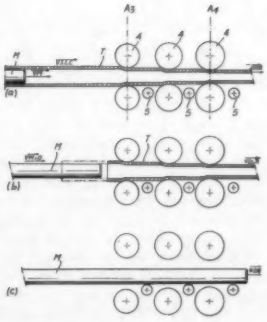
Jacques Verdickt, Paris, France, assignor to Vallourec, Paris, France

Filed Nov. 19, 1980, Ser. No. 208,448

Claims priority, application France, Nov. 21, 1979, 79 28700

Int. Cl.³ B21B *17/10, 31/20*

U.S. Cl. 72—208 **3 Claims**



1. A process for the manufacture of a seamless steel tube comprising the steps of

hot-rolling a tube blank sleeved on a mandrel in a continuous rolling mill,

controlling the speed of the mandrel during said rolling,

withdrawing the tube from the mandrel and releasing the mandrel at the end of the rolling operation so that it issues from the continuous rolling mill after the tube,

commencing reduction of the tube along the axis of the rolling mill, in the zone of the tube not filled by the mandrel, before the end of the rolling operation, by passing the said zone between reducing rolls located downstream of and in line with the continuous rolling mill,

completing the reduction of the tube before releasing the mandrel and before the mandrel, following the tube, reaches the reducing roll stands,

and triggering the opening of the reducing roll stands before the mandrel is passed through the said reducing stands,

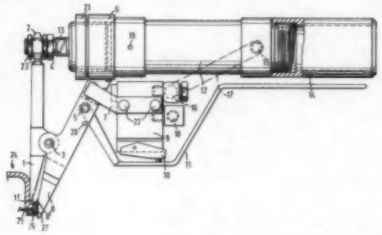
whereby contact of the mandrel with the working surfaces of the reducing rolls is avoided.

4,375,161

DEVICE FOR OPENING FLANGED JOINTS

Joerg P. Braun, Stuttgart, and Stefan Fritz, Freiberg, both of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Apr. 21, 1981, Ser. No. 256,071
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015602
Int. Cl.³ B21D 7/06
U.S. Cl. 72—412 10 Claims



1. A device for opening a flanged joint of the type wherein one or more flange extensions on one flange part of the joint are bent around into engagement with the other flange part of the joint, said device comprising:

a first elongated leg member;

a second elongated leg member;

a hinge connection between said first and second leg members at a point intermediate the ends thereof, to form a pliers-like connection between said first and second leg members;

said first leg member including a first generally narrowed end portion adapted to enter behind the bent-around flange extension of the flanged joint and engage the end of the bent-around flange extension;

said second leg member including a first end portion cooperating with the first end of said first leg member and comprising a generally flat contact surface on its side facing said first end portion of said first leg member, said flat contact surface being adapted to engage and support the outer circumferential surface of the flanged joint;

means, attached to the second ends of said first and second leg members, for selectively producing relative rotation of said leg members with respect to each other about said hinge connection, said rotation producing means comprising a fluid actuated cylinder including a piston rod, said first leg member including a fork in its second end engaging with said piston rod to produce a hinged connection therebetween, and said second end of said second leg member being rigidly connected to said cylinder; and

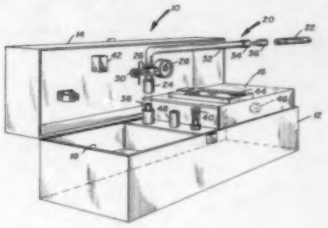
a fluid control valve rigidly connected with said second arm member, said control valve having an inlet and an outlet for a working fluid of said cylinder, said cylinder also including an inlet for said working fluid, and a hose connecting said valve outlet with the working fluid inlet of said cylinder, wherein said control valve includes a valve actuating member and wherein said device further comprises a manual lever hingedly attached to the second leg member for selectively actuating said valve actuating member.

4,375,162

PORTABLE AIR TEST KIT AND SYSTEM

Robert S. Eppley, 921 Shirley Manor Rd., Reisterstown, Md. 21136

Filed Mar. 26, 1981, Ser. No. 247,721
Int. Cl.³ G01M 3/02
U.S. Cl. 73—37 17 Claims



1. A portable air test kit and system, comprising:

a container means, said container means having a suitable closure means;

a power supply means, said power supply means being removably affixed within said container means, said power supply means having an electrical wiring system associated therewith;

a compressor means, said compressor means having an outlet means, said compressor means being removably affixed within said container means, said compressor means having an attached associated motive power means, said associated motive power means being suitably connected to said power supply means;

a starter means, said starter means having an automatic stop means associated therewith when said closure means is closed on said container means; and

a high pressure test means, said high pressure test means being separately stored within said container means when not in use, said high pressure test means being removably connected to said compressor means when in a testing configuration, said high pressure test means consisting of a first valved female quick-connect means, a second valved female quick-connect means, a high pressure hose means, a pressure gage means, a relief valve means, and a cross-connector means, said cross-connector means having four separate connecting means, said first female quick-connect means being removably affixed to a first connecting means of said cross-connector means, said high pressure hose means having a first and thereof being removably affixed to a second connecting means of said cross-connector means, said pressure gage means being removably affixed to a third connecting means of said cross-connector means, and said valve means being removably affixed to a fourth connecting means of said cross-connector means, said valve means serving as a pressure relief valve when manually opened, and said second female quick-connect means being removably affixed to the distal second end of said high pressure hose means.

4,375,163

METHOD AND APPARATUS FOR ON-COLUMN DETECTION IN LIQUID CHROMATOGRAPHY

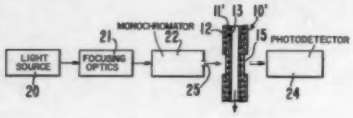
Frank J. Yang, Danville, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jan. 8, 1981, Ser. No. 223,445
Int. Cl.³ G01N 31/08
U.S. Cl. 73—61.1 C 10 Claims

1. A method for high resolution on-column detection in high resolution liquid chromatography, comprising:

providing a fused silica microcapillary column having an inner diameter less than 500 μm;

activating the interior of said column with a chromatographically active material;
applying a protective coating to the exterior of said column;
removing a segment of said protective coating to expose the underlying segment of said fused silica column;
providing an optical chromatographic detector;



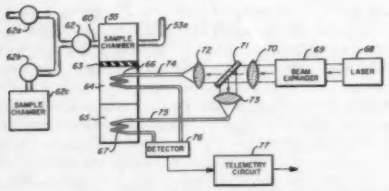
positioning said exposed segment of said column in the optical path of said detector;
flowing a sample containing species to be identified through said column; and
detecting separated species as they flow through said exposed segment of said column.

4,375,164

FORMATION TESTER

Carl Dodge, Alief, and Harry D. Smith, Jr., Houston, both of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 22, 1981, Ser. No. 256,447
Int. Cl.³ E21B *49/00*; G01J *5/48*; E21B *47/06*
U.S. Cl. 73—154 **13 Claims**



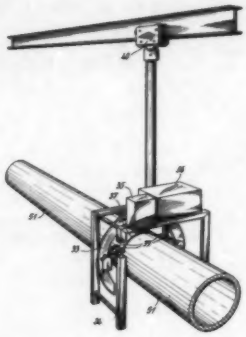
1. A method for measuring a parameter of the conditions in a well bore traversing earth formations comprising the steps of:
at a first location in a well bore subjecting a first parameter sensor to a first parameter condition to be measured where said first parameter sensor is a coiled fiber optic;
subjecting at said first location, a second parameter sensor to a second parameter condition to be measured where said second parameter sensor is a coiled fiber optic, said coiled fiber optics being substantially equal in length;
applying a beam of coherent light to each of said fiber optics;
comparing the output of the first and second sensors for obtaining a measurement of the difference in effect of said first and second parameters on said first and second parameter sensors;
converting the compared output of said first and second parameter sensors into an electrical signal having a function relating to the difference in effect of said first and second parameters on said first and second parameter sensors; and
telemetering said electrical signal to the earth's surface.

4,375,165

SYSTEM FOR INSPECTING WELDED JOINTS IN PIPE LINES BY MEANS OF ULTRASONIC WAVES

Arie de Sterke, Vlaardingen, Netherlands, assignor to Rontgen Technische Dienst B.V., Rotterdam, Netherlands

Filed Jun. 25, 1980, Ser. No. 162,750
Claims priority, application Netherlands, Jun. 26, 1979, 7904973
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—622 **11 Claims**



1. System for inspecting circumferentially welded joints in pipe lines and the like using ultrasonic waves, comprising a multi-channel ultrasonic device including switching means for selectively exciting multiple ultrasonic wave generating crystals, manipulation means having a control unit and at least a set of ultrasonic probes, and a recorder, the manipulation means being approximately circular and adapted to be positioned around the pipe line and the set of ultrasonic probes being attached to said manipulation means such that the probes are pressed against the outer wall of the pipe near the welded joint, said probes providing multiple crystals angularly disposed to inspect various portions of the weld which, combined, constitute the entire weld, the crystals in each probe being activated by the multi-channel ultrasonic device through the switching means for transmitting ultrasonic waves into the pipe material and for receiving the reflected waves, which reflected waves are processed by the ultrasonic device and registered by the recorder, the set of ultrasonic probes further including crystals located to direct and receive longitudinal ultrasonic waves reflected from the pipe interior surface to measure pipe thickness, and said switching means comprising means defining gates enabling angled crystals for receipt of transverse ultrasonic waves reflected from weld defects, the gates being timed on the basis of measured thickness, angle of each said transverse wave and its propagation speed in order to avoid recording of reflections due to weld geometry.

4,375,166

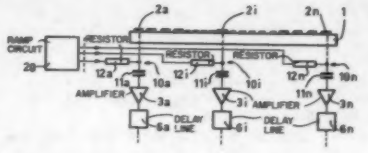
ULTRASOUND EXAMINATION APPARATUS COMPRISING A MOSAIC OF TRANSDUCERS OF AN ELECTROSTRICTIVE MATERIAL

Michael J. Auphan, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,822
Claims priority, application France, Mar. 21, 1980, 80 06295
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—628 **3 Claims**

1. An ultrasound examination apparatus, comprising at least one transducer for the repeated emission of ultrasonic signals and, for the reception of ultrasonic signals, a mosaic of individual ultrasonic transducers which are made of an electrostrictive material with a nonremanent polarization which is applied to each individual transducer by a corresponding electrode

which is connected to a polarization stage, characterized in that it comprises a processing circuit for the echo signals supplied by the individual transducers in which each of the processing channels associated with one or with several individual transducers comprises coupling means (**10***i*) which serve to couple the electrodes to the polarization stage and which enable the application of a polarization voltage to each of the



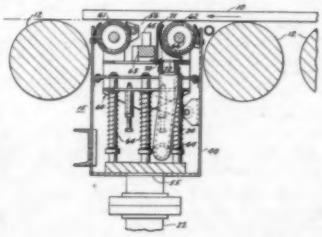
electrodes while inhibiting the transmission of this voltage to the part of the processing channels which is situated behind the coupling means, said polarization stage comprising a single circuit (**20**) for generating a voltage ramp having a waveform which is approximately the inverse of that of the curve of the attenuation of the ultrasonic signals within the structures examined.

4,375,167

ULTRASONIC TRANSDUCER SUSPENSION SYSTEM FOR ON-LINE HIGH SPEED ULTRASONIC INSPECTION OF FLAT ROLLED PRODUCTS

Edward M. Nusbickel, Jr., Allentown; William L. Hutchinson, Quakertown, and James E. Albert, Bethlehem, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 18, 1981, Ser. No. 264,390
Int. Cl.³ G01N *29/00, 24/00*
U.S. Cl. 73—644 **2 Claims**



1. Ultrasonic apparatus for testing a hot flat workpiece located below and along the path of the workpiece comprising

ultrasonic transducer means having at least one multiplexed array of ultrasonic transducers, each transducer capable of transmitting an ultrasonic beam into the workpiece and receiving a reflected beam signal,

spraying means directing a spray against the bottom of the workpiece in a direction opposite the direction of travel of the workpiece at an angle of approximately 27° or less to the bottom of the workpiece to cool the hot workpiece and remove steam vapor formed at the workpiece,

said spraying means sprayed at an apparent liquid velocity of at least 44 feet per second by combining the velocity of the liquid and the opposing velocity of the workpiece moving along its path,

guiding means to allow said ultrasonic transducer means to follow the contours of the surface of the workpiece,

a container holding said transducer means, spraying means and guide means,

a flooding means in said container and overflowing said container for acoustical coupling; and,

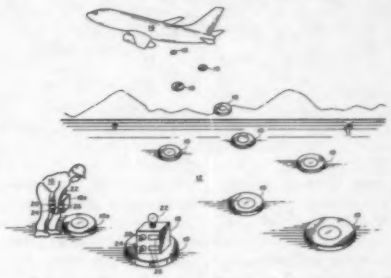
all said transducer means, spraying means, container and flooding means, and guiding means completely located beneath the path of the workpiece.

4,375,168

APPARATUS FOR LOW G-LEVEL VIBRATIONAL PULSE DETECTION

Richard M. Swenson, and Jerome B. Franck, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1981, Ser. No. 250,813
Int. Cl.³ G01H *11/00*
U.S. Cl. 73—658 **8 Claims**



1. Apparatus for monitoring vibrational pulse activity of an explosive detonator device, said vibrational pulse activity having generated when said explosive detonator is activated, said apparatus comprising:

a diode bridge rectifier proximate to said explosive detonator device and acoustically coupled thereto for providing a voltage output when activations of explosive detonator device generates mechanical vibrations of very low g-level over a brief time interval,

means coupled to said bridge rectifier means for amplifying said voltage output;

timing means responsive to said amplified voltage output for monitoring the time which passes between the occurrence of a specified event, which precedes said vibrational pulse, and the occurrence of said vibrational pulse;

latch means coupled between said amplifier means and said timing means for enabling said timing means to commence monitoring the passage of time when said specified event occurs, and for preventing said timing means from monitoring the passage of time when said diode bridge rectifier provides said voltage output; and

means responsive to said amplified voltage output for providing notice when said explosive detonator generates said vibrational pulse.

4,375,169

TURBULENCE CONVEYOR FLOW METER

Giuseppe Torresin, Padova, Italy, assignor to Francesca Succu, Padova, Italy

Filed Sep. 10, 1980, Ser. No. 185,683
Claims priority, application Italy, Sep. 14, 1979, 84138 A/79
Int. Cl.³ G01F *1/22*
U.S. Cl. 73—861.53 **8 Claims**

1. A turbulence conveyor flow meter particularly for monitoring human respiratory functions, comprising:

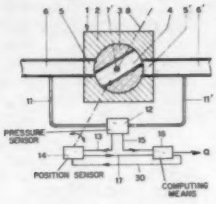
a body portion including a cavity having three openings, a first opening to be connected to a patient's mouth, a second opening forming an input to said cavity, and a third opening forming an output from said cavity for conveying the inspired and expired air to different paths; a movable intercepting element within said cavity with at least a

passage way connecting said first opening to said second opening during inspiration and to said third opening during expiration, the movement of said intercepting element causing variations of the area open to the flow;

a first pressure transducer means connected between said first opening and said second opening;

a second pressure transducer means connected between said first opening and said third opening;

said first and second pressure transducer means responsive to variable pressure drops across the openings they are associated with;



a servo mechanism connected to said first and second pressure transducer means adapted to respond to variable signals therefrom for moving said intercepting element to vary the degree of registration of said passage way with said first and second or first and third openings; and

a computing means connected with and receiving signals from said first and second pressure transducer means and said servo mechanism for sending signals to said servo mechanism to control the operation of said servo mechanism and to also provide an indication of flow rate.

4,375,170

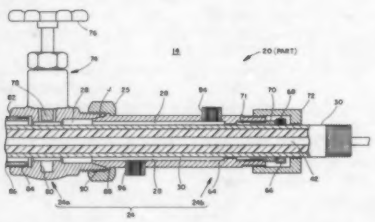
DECONTAMINATING FLUID SENSOR MECHANISM

Elmer A. Sperry, III, Pompton Plains, and Robert F. Legenhausen, Bound Brook, both of N.J., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 27, 1981, Ser. No. 248,612

Int. Cl.³ G01N *1/22*

U.S. Cl. 73—863.85 **23 Claims**



1. An improved sensor mechanism for performing measurements on sample fluids that are not to be allowed to escape into the environment, said sensor mechanism comprising, in combination,

(a) a housing having first and second sections;

(b) a retractable sensing assembly within said housing, said sensing assembly having an extended position in which the sensing assembly extends into or through the first housing section, and a retracted position in which the sensing assembly occupies the second housing section;

(c) a closure device in said first housing section, said closure device having an open state in which an open path is provided for the movement of the sensing assembly between the first and second housing sections, and having a closed state in which the second housing section is sealed off from the source of sample fluid;

(d) an inlet and an outlet in said housing whereby fluids trapped within the housing by the closure of the closure device may be removed for safe disposal;

(e) fastening means for fastening and unfastening the first and second sections of the housing; and

(f) a seal between the sensing assembly and the housing for preventing the leakage of fluid for all positions of the sensing assembly.

4,375,171

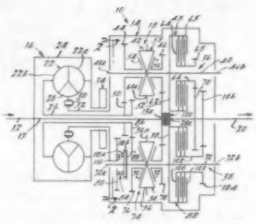
AUTOMATIC TRANSMISSION

Timothy J. Morscheck, Lathrup Village, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 884,078, Mar. 6, 1978, abandoned. This application Aug. 15, 1980, Ser. No. 178,429

Int. Cl.³ F16H *3/08*

U.S. Cl. 74—331 **27 Claims**



2. In a powershift transmission of the type including an input drive adapted to be continuously connected to an engine, an output drive adapted to be continuously connected to a load, and first and second intermediate shafts mounted for rotation independent of said drives, the improvement comprising:

a torque converter continuously connected at its input to said input drive;

a first input shaft continuously connected to the output of said torque converter;

a second input shaft continuously connected to said input drive and bypassing said torque converter;

first means operative to alternately synchronize and clutch either of said intermediate shafts with either of said input shafts while said intermediate shafts are drivingly disconnected from said output drive;

second means operative thereafter to alternately clutch said intermediate shafts with said output drive to effect alternate driving connections between said drives via said intermediate shafts.

4,375,172

BLOCKED CHANGE GEAR TRANSMISSION UTILIZING RESILIENT SHIFTING MECHANISMS AND IMPROVED JAW CLUTCH ASSEMBLY THEREFOR

Elmer A. Richards, Kalamazoo; John R. Vandervoort, Richland, and Edward J. Bogema, Vicksburg, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

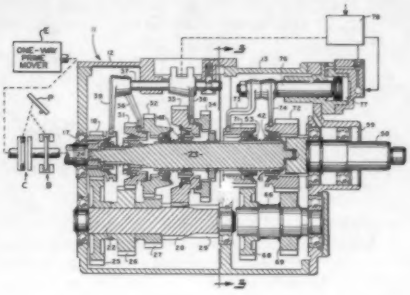
Continuation of Ser. No. 947,808, Oct. 2, 1978, abandoned. This application May 1, 1981, Ser. No. 259,637

Int. Cl.³ F16H *3/38*; F16D *11/10*

U.S. Cl. 74—339 **7 Claims**

1. An improved blocker and jaw clutch assembly for a blocked transmission of the type comprising a substantially non-deformable blocker ring splined to one of two axially engageable clutch members for rotation therewith, said blocker effective to sense non-synchronous rotation of said clutch members to block relative axial movement of one of said clutch members toward the other of said clutch members when said clutch members are not rotating at a substantially synchro-

nous rate, one of said clutch members carrying axially and radially inwardly extending clutch teeth for interengagement with axially and radially outwardly extending clutch teeth carried by the other of said clutch members, the improvement comprising:



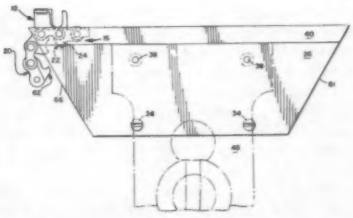
the backlash between said interengageable clutch members being in the range of five to fifteen times greater than the about 0.006 inch (0.015 cm) backlash normally utilized with axially interengageable clutch members for non-blocked transmissions and synchronized transmissions.

4,375,173

SAW CHAIN HOLDING DEVICE

Adrian Z. Lesmeister, 2504 Linwood St., SW., Cedar Rapids, Iowa 52404

Filed Apr. 8, 1981, Ser. No. 252,236
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—78 R **9 Claims**



1. A device, operated in a vise having opposed movable jaws, for holding a portion of a saw chain during sharpening of the chain cutters, the saw chain including a cutter train straddling a drive train with cogs of the drive train protruding below the cutter train, comprising:

two corresponding plates pivotably joined near their lower edges, said plates being adapted to rest in the vise with a pincer section of the plates opposite the movable jaws; and

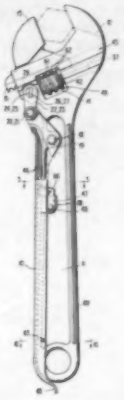
means movable in conjunction with said pincer section for gripping both the cutter train and the drive train while permitting access to the chain cutters for sharpening, said gripping means comprising a pair of upright members with opposing cog clamp portions close to the top edges of said upright members for engaging the cogs and opposing relief portions comprising confronting chamfers along said top edge portions for engaging the cutter train.

4,375,174

ADJUSTABLE END WRENCH RELEASABLE LOCKING FEATURE

Stephen E. Shanley, Jr., Grosse Ile, Mich., assignor to Shan-Lok Corporation, Grosse Ile, Mich.

Filed Aug. 24, 1981, Ser. No. 295,550
Int. Cl.³ B25B *13/16, 7/12*
U.S. Cl. 81—165 **27 Claims**



1. In an adjustable end wrench comprised of

an elongated handle that ends in a fixed jaw portion having a face for engaging one side of an object to be gripped by the wrench;

an undercut slot in the fixed jaw portion, the axis of the slot being substantially perpendicular to the plane of the face of the fixed jaw;

a movable jaw member having (a) an elongated, protuberant shank portion that mates with the undercut slot and is slidably held in said slot, (b) a face that is opposed to the face of the fixed jaw, and (c) a rack portion that runs parallel to the axis of the slot;

an opening through the fixed jaw portion adjacent the slot, said opening being in communication with the slot;

and a worm gear rotatably mounted in the opening in driving engagement with the rack portion of the movable jaw member, so that by turning the worm gear one can adjust the distance between the faces of the fixed and movable jaws, said gear having a head end and a foot end, the rack moving from head to foot as the gear is turned to close the distance between the faces of the fixed and movable jaws;

the IMPROVEMENT wherein,

the worm gear is so mounted in the opening that there is play in the gear's axial direction, and wherein the wrench further includes

a first hole in the fixed jaw portion that extends substantially perpendicularly away from the head end of the worm gear;

a second hole in the fixed jaw portion that intersects the first hole, is substantially perpendicular to the first hole, and extends at least part way through the fixed jaw portion;

biasing means that urge the worm gear toward the second hole;

a cylindrical pin rotatably mounted in the second hole, the pin having a cam surface extending radially around a central segment of the pin, said cam surface being aligned with the first hole and having a high position at one location and a low position at another location;

cam follower means mounted in the first hole, riding on the cam surface, and extending from the cam surface to the head end of the worm gear, said cam follower means serving to push the worm gear in a direction away from the second hole when the pin is rotated from the low cam

position to the high cam position, thereby taking up at least part of the axially directed play in the gear;

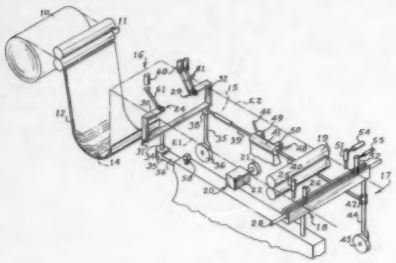
and crank means for turning the pin back and forth between its low cam position and its high cam position.

4,375,175

TOWEL CUTTING MACHINE

Norman E. Elzas, Atlanta, and James B. Middleton, Decatur, both of Ga., assignors to Nemo Industries, Inc., Atlanta, Ga.

Filed May 26, 1981, Ser. No. 266,800
Int. Cl.³ B26D 5/20; D06H 7/02
U.S. Cl. 83—18 11 Claims



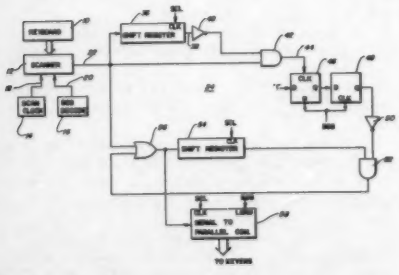
1. A method for automatically cutting terry towels from a length of material including a plurality of terry towels, said length of material defining a cutting space of non-terry material between contiguous towels and defining a cut-line in the center of said cutting space, said method including the steps of aligning a first edge of said material with a cutting means so that said cut-line at said first edge is positioned to be cut by said cutting means, holding said first edge of said material adjacent to said cutting means while pivoting said cutting means at said first edge to align the opposite end of said cutting means with said cut-line at a second edge of said material, pulling said material taut to straighten said cut-line and cutting said material with said cutting means.

4,375,176

KEYBOARD LATCH FOR ELECTRONIC ORGAN

David T. Starkey, Oak Park, Ill., assignor to Norlin Industries, Inc., White Plains, N.Y.

Filed Jun. 4, 1980, Ser. No. 156,359
Int. Cl.³ G10H 1/00
U.S. Cl. 84—1.01 9 Claims



8. In an electronic musical instrument having a keyboard including a plurality of keys, each of said keys including an associated output switch continuously developing a first logic signal in response to depression of the respective key, the improvement comprising:

a plurality of differentiating means each connected to a respective one of said key switch outputs and OR gate means having a plurality of inputs each connected to the output of a respective one of said differentiating means for developing a control signal in response to each depression of any one of said keys; and

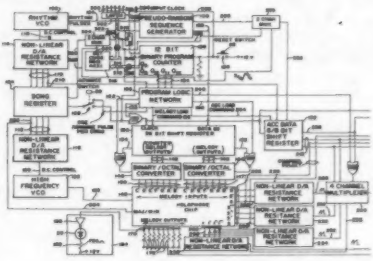
means responsive to each of said control signals for continuously developing an output signal representing all of the keys depressed at the time when the respective one of said control signals was developed.

4,375,177

AUTOMATIC ELECTRONIC MUSICAL INSTRUMENT

James M. McCoskey, Santa Rosa, Calif., assignor to John Larson, Sonoma, Calif. and Douglas Gustafson, Jerome, Ariz., part interest to each

Filed Apr. 13, 1981, Ser. No. 253,772
Int. Cl.³ G10H 1/42, 5/00
U.S. Cl. 84—1.03 15 Claims



1. An automatic electronic musical instrument, which comprises:

means for generating an at least substantially random sequence of data bits,

a first shift register having an input connected to receive a first portion of the at least substantially random sequence of data bits from said random sequence data bit generating means, said first shift register having a first and second plurality of outputs,

means connected to receive input signals from the first and second plurality of outputs of said first shift register for generating rhythm and pitch signals in response to the input signals,

a second shift register connected to receive a second portion of the at least substantially random sequence of data bits which is different than the first portion of data bits and the rhythm signal, said second shift register having a plurality of outputs,

a musical frequency generating means including means for transforming dissonant frequency combinations selected for output from said frequency generating means to compatible frequency combinations and connected to receive the pitch signal from said pitch signal generating means and input signals from the plurality of outputs of said second shift register, said musical frequency generating means providing melody signal outputs in response to the pitch signals and the input signals from said second shift register, and

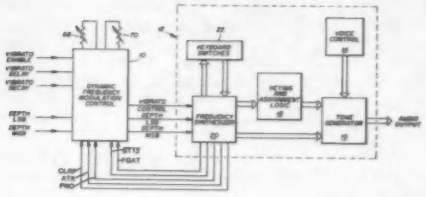
means for selectively inhibiting the input signals to said musical frequency generating means from the plurality of outputs of said second shift register in accordance with a predetermined pattern.

4,375,178

DYNAMIC FREQUENCY MODULATION CONTROLLER FOR AN ELECTRONIC MUSICAL INSTRUMENT

John T. Whitefield, Harleysville, Pa., assignor to Allen Organ Company, Macungie, Pa.

Filed Mar. 20, 1981, Ser. No. 245,601
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.25 **16 Claims**



1. In an electronic musical instrument having at least one keyboard with keys corresponding to the notes of a musical scale apparatus for controlling the dynamic frequency modulation of tones reproduced from key pulses associated with active keys of the keyboard comprising:

(a) tonal effect control means for selecting one of the desired modulation effects;

(b) counting means having a plurality of distinct sequential time periods for creating a delay proportional to its counting rate for generating a first output signal having a timing indicative of the selected modulation effect and second and third output signals indicative of the depth for each effect;

(c) triggering means for initiating individually a count in each of the time periods of the counting means in response to the generation of a key pulse resulting from the activation of a key;

(d) count source means for controlling the counting rate of the counting means;

(e) comparator means for disabling the count in any of the time periods of the counting means when output control signals reach a preselected value;

(f) timing alignment means for realigning the first, second and third output control signals of the counting means with the corresponding key pulse;

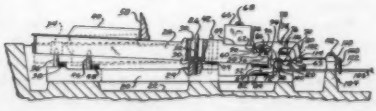
whereby the frequency modulated tone reproduced in response to a key pulse and the output control signals of the counting means corresponding to such key pulse will be independent of the effect of any key pulses occurring either prior or subsequent thereto.

4,375,179

ACTION FOR ELECTRONIC PIANO

Harold O. Schwartz, Elburn, Ill.; Ray F. Gong, Ft. Wayne, Ind., and Victor Durk, Palatine, Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Oct. 27, 1980, Ser. No. 200,352
Int. Cl.³ G10C *3/12*
U.S. Cl. 84—439 **18 Claims**



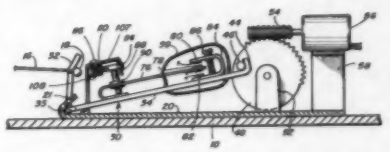
1. A piano action for use in a piano having no hammers nor associated conventional hammer actions for providing a touch similar to that of said conventional hammer and hammer action and comprising support means, a key having inner and outer ends, means pivotally mounting said key from said support means intermediate the ends of said key for manual pivoting thereof, means interacting between said support means and said key to provide a limit position for said key, a switch actuating operated member, means pivotally mounting said operated member from said support means beyond the inner end of said key, and means biasing said operated member and said key to a rest position, said key on said inner end and said operated member having confronting convex surfaces contacting one another, one of said convex surfaces having convex portions of different radii merging into one another as a continuous convex surface such that said key when manually pivoted from rest position pivots said operated member a predetermined distance with said convex surfaces sliding along one another and off of one of said surface portions on to the other whereupon said operated member changes speed before said key reaches limit position to provide a feel of let-off.

4,375,180

AUTOMATIC TUNING DEVICE

Donald T. Scholz, 13 Rich Valley Rd., Wayland, Mass. 01778

Continuation-in-part of Ser. No. 190,753, Sep. 25, 1980, abandoned, which is a continuation of Ser. No. 74,166, Sep. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 931,841, Aug. 7, 1978, abandoned. This application Sep. 10, 1981, Ser. No. 300,759
Int. Cl.³ G10G *7/02*
U.S. Cl. 84—454 **43 Claims**



14. A tuning device for a stringed musical instrument comprising:

means for anchoring an end of a string, said anchor means being movable in a manner to vary tension on the string;

means operatively associated with the anchor means for moving the anchor means in a selected direction either to increase or decrease the tension on the string;

means for sensing the tension on the string; and

control means for comparing the sensed tension of the string with that of a predetermined tension, said control means being operatively associated with the moving means to move the anchor means in a direction and to an extent which will tension the string to a value corresponding to that predetermined tension;

said means for sensing including switch means supported on said anchor means and having at least two positions indicative of different stress levels of the anchor means.

4,375,181

HYDRAULIC CYLINDER EXTENDING IN THREE FORCE MODES

John P. Conway, 172 Carriage La., Columbia, S.C. 29210

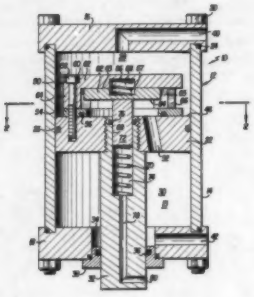
Filed Jan. 21, 1981, Ser. No. 226,550
Int. Cl.³ F15B *15/17, 13/042*
U.S. Cl. 91—416 **18 Claims**

1. In combination with a liquid fluid piston device having a pressure sealed housing, a slidable piston therein having two opposed faces of differential areas and dividing said cylinder housing into two opposing pressure chambers of variable volume, a piston rod extending from said piston passing through one of said chambers and extending from said housing, said chamber being the rod end chamber, a source of pressurized fluid, conduit means for permitting flow of pressurized fluid

into and out of each of said pressure chambers, first valve means for selectively conducting fluid to the other of said opposing chambers to effect displacement of said piston, said other chamber being the back end chamber; automatic means for varying the extension force modes of said device in response to changes in pressure conditions within said chambers, comprising

first passage means in said piston for conducting free flow of fluid through said piston between said opposing chambers,

second valve means having a stationary valve seat and independently movable discrete unattached elements actuated by changes in fluid pressures within said chambers in response to increased loads and movable in response to changes in pressures through a plurality of positions thereby providing sequentially low force rapid extension mode of movement, moderate force rapid extension mode of movement, and high force relatively slow extension mode of movement,



second passage means fluidly connecting a reference pressure to said second valve means independent of pressures within said chambers,

bias spring means for holding said second valve means in an open position until overcome by the fluid pressure in a chamber when the resisting load exceeds a predetermined value thereby allowing said second valve means to restrict flow between said chambers to uni-directional flow from the rod end chamber to the back end chamber and thereafter blocking flow between said chambers when pressure is unloaded from the rod end chamber,

relatively lighter means continually urging said valve means to a seated position, and

third valve means connected to said rod end chamber for unloading pressurized fluid from said chamber to provide said high force mode.

4,375,182

ULTRA-SENSITIVE DIAPHRAGM WITH DUAL STRESS-RELIEF STRUCTURES

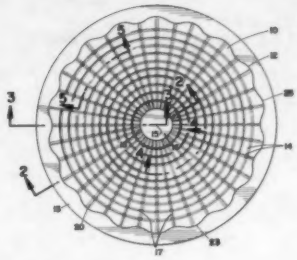
John R. Zavoda, 5245 Darrow Rd., Hudson, Ohio 44236

Filed Oct. 31, 1980, Ser. No. 202,469

Int. Cl.³ F16J *3/02*

U.S. Cl. 92—98 R **14 Claims**

1. In a fluid pressure-responsive diaphragm, the combination of a discal body, a plurality of annular corrugations in said body in a radial periodic wave-form configuration to relieve radial tensile stress therein, and a plurality of radially-extending spokes in said body in a circumferential periodic wave-form configuration conforming to and integrated with the peaks and valleys of said annular corrugations to relieve circumferential tensile stress therein, each of said wave-forms modifying the other.



4,375,183

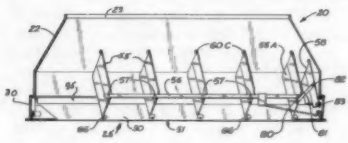
INSULATED SHUTTER ASSEMBLY

William R. Lynch, 1311 Kingswood La., Onalaska, Wis. 54650

Filed Jan. 14, 1981, Ser. No. 224,928

Int. Cl.³ F24F *7/00, 13/14*

U.S. Cl. 98—110 **34 Claims**



1. In a shutter apparatus for use in connection with a fan, a perimeter frame having an inlet opening which lies along a reference plane, a plurality of shutter blades mounted within said perimeter frame and movable from a first closed position wherein the blades substantially close off air passage through the inlet opening to a second position wherein air is permitted to flow through the inlet opening, the improvement comprising seal means along the edges of said inlet opening, means to mount said shutter blades for movement between their first and second positions and for limited movement toward and away from the reference plane, and linkage means to move the shutter blades in a direction generally perpendicular to the reference plane to compress the seal means with the shutter blades in the closed position.

4,375,184

APPARATUS FOR HEATING FOODS, SUCH AS FRENCH FRIED POTATOES

John W. Gilliom, Wooster, Ark., assignor to UMC Industries, Inc., Stamford, Conn.

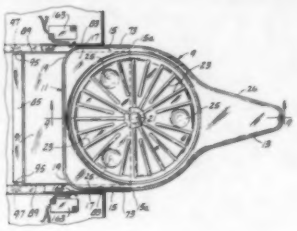
Division of Ser. No. 185,210, Sep. 8, 1980. This application Apr. 14, 1981, Ser. No. 254,075

Int. Cl.³ A47J *37/00*

U.S. Cl. 99—422 **8 Claims**

1. A receptacle for holding food to be heated in an oven and then functioning as a serving plate for the food, said receptacle being a disposable one time use receptacle generally in the form of a relatively shallow pan having an integral handle extending outwardly at its rim, the pan being adapted to be placed in an oven for heating food in the pan with the handle extending out of the oven for being grasped to remove the pan from the oven, the pan with the handle being formed in one piece of paper or the like adapted to withstand oven temperatures and of such low heat conductivity as to maintain the handle cool enough to be grasped to remove the pan from the

oven after the pan has been placed in the oven and the food in the pan has been heated, the pan being of circular form and the handle being relatively thin and flat and extending radially outwardly at the rim of the pan generally in the plane of the rim, the pan being for use in a convection oven wherein food in the pan is heated by flowing hot air over and around it, the



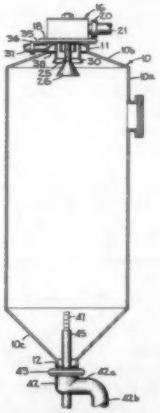
pan having its bottom formed to provide spaces for flow of air under the food, the spaces being formed by channels in the bottom extending generally radially from adjacent the wall of the pan toward the center of the pan, wherein the bottom of the pan is generally flat, the channels terminate short of the center of the pan, and wherein a boss is provided extending up from the bottom of the pan at the center.

4,375,185

MILK STERILIZING APPARATUS

Samuel A. Mencacci, San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed May 26, 1981, Ser. No. 267,209
Int. Cl.³ A23C *3/02*
U.S. Cl. 99—453 **11 Claims**



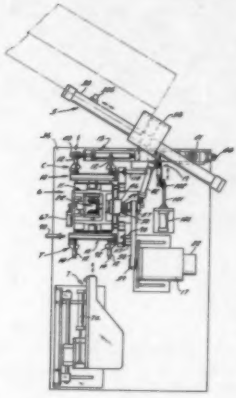
1. Apparatus for heat-treating liquiform material comprising vessel means closed by top, bottom and side wall means which define an internal chamber, means for directing a stream of liquid to be heated into the chamber at the upper end of the vessel, means for forming the stream of liquid into a radially-expanding descending curtain-like film which decreases in thickness as it moves down in said chamber, said curtain-like film including inner and outer surfaces which increase in area during descent, and means for directing steam into said chamber into direct contact with the inner and outer surfaces of said liquid for quickly sterilizing the liquid.

4,375,186

AUTOMATIC CORD HANKING MACHINE

Ragnar Gudmestad, West Allis, and John D. Butler, New Berlin, both of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

Filed Jun. 26, 1981, Ser. No. 277,964
Int. Cl.³ B65B *13/28*
U.S. Cl. 100—7 **21 Claims**



1. A cord hanking machine whereby each of a succession of cords of substantially uniform length is wound into a coil and a wire tie is applied around each coil, said machine being characterized by:

A. a pair of turntables, each having a pair of forwardly projecting coiling posts that are spaced equal distances to opposite sides of a rotational axis of the turntable;

B. a turntable carrier on which said turntables are mounted in coaxial spaced apart relationship, with the coiling posts on each turntable projecting away from the other turntable;

C. means mounting said turntable carrier for rotation in fixed increments about a carrier axis transverse to the coinciding axes of the turntables, to carry each turntable alternately

(1) to a coiling station at which a length of cord is delivered to the turntable and the turntable is rotated to coil and said cord around its coiling posts and

(2) to a tying station at which a tie is applied around a coiled cord on the turntable;

D. a tying machine for applying a tie around a coiled cord; and

E. means for moving said tying machine in opposite directions parallel to said coinciding axes, between an operative position adjacent to the turntable at the tying station and a retracted position spaced at a substantial distance from that turntable.

4,375,187

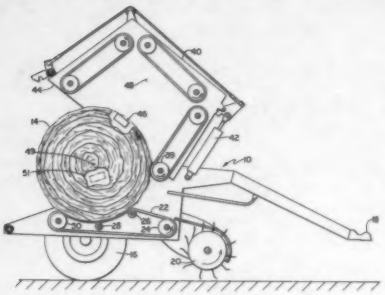
EJECTION MECHANISM FOR A ROUND BALER

Leroy M. Kluver, Celina, Ohio, and Richard W. Kunkle, Portland, Ind., assignors to The Paul Revere Corporation, Greenwich, Conn.

Filed Jul. 13, 1981, Ser. No. 282,610
Int. Cl.³ B30B *5/06*; A01D *39/00*
U.S. Cl. 100—88 **6 Claims**

1. An ejection mechanism for use with a baler of the type wherein is a wheel mounted cage-like frame surrounding a baling chamber of generally cylindrical shape having closed sidewalls adjacent the ends of the bale, the baling chamber being divided into two portions with one portion being hinge mounted along one edge to allow the second edge to swing

open as a gate through which a completed bale can be discharged, the gate being maintained in a closed condition during the remainder of the bale forming operation, the second portion of the baling chamber including a bottom conveyor for continuously adding crop material to the periphery of the bale during the bale forming process, said bottom conveyor additionally serving to impart rotational motion to the partially completed bale, said ejection mechanism comprising:



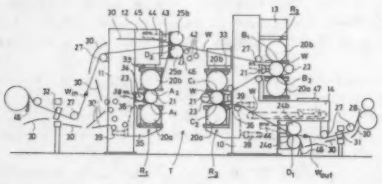
bale contacting means synchronized with the opening of said gate for introducing a coupling force which applies force to stop the bale from turning, thereby allowing the bottom conveyor to move the completed bale out of the baler.

4,375,188

ON-MACHINE SUPERCALENDER APPARATUS

Veikko Leiviskä, Porvoo, Finland, assignor to Valmet Oy, Finland

Filed Jun. 8, 1981, Ser. No. 271,237
Claims priority, application Finland, Jun. 10, 1980, 801853
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—162 R **6 Claims**



1. On-machine supercalender apparatus adapted to be located at the discharge end of a paper making machine and arranged so as to function as a supercalender, comprising:

hard and soft calender rolls forming soft calendering nips with each other, said calender rolls being arranged in at least three roll groups, each of said calender roll groups consisting of three calender rolls including a central roll and two outer rolls;

said calender roll groups being separate from each other such that the calender rolls of one group are neither directly nor indirectly in nip contact with the calender rolls of another group; and

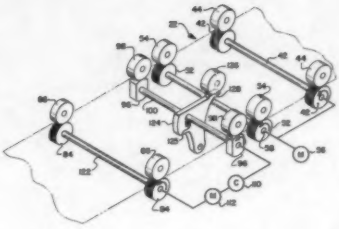
wherein the central roll of each calender roll is constituted by a hard calender roll and the two outer rolls are constituted by soft calender rolls which form a pair of soft calendering nips with the hard central roll, at least a majority of said soft calender rolls being replaceable during operation of the apparatus without any significant interruption in operation of the apparatus.

4,375,189

LABEL PRINTER

George J. Berner, Xenia, and Robert M. Frow, Kettering, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Apr. 30, 1981, Ser. No. 259,287
Int. Cl.³ B41L *45/00*
U.S. Cl. 101—68 **15 Claims**



1. A label printer for printing both human readable and machine readable indicia on the end label in a strip of perforated label stock, comprising:

printer means, positioned at a print station, for printing both human readable and machine readable indicia on a label transported past said print station,

supply means providing a strip of label stock having laterally extending perforation lines spaced along said strip so as to define a plurality of labels,

label advancing rollers, between said supply means and said print station, for engaging opposite sides of said label stock and for advancing the label stock through said print station to permit printing on the end label thereof, whereby human readable indicia may be printed on the end label during advancement of said end label past said print station by a predetermined distance,

label tensioning rollers, positioned on the opposite side of said print station from said label advancing rollers, for engaging opposite sides of said end label as said label is transported past said print station, said label tensioning rollers being positioned a distance from said print station equal to or less than said predetermined distance, whereby said label stock is engaged by both said label advancing rollers and said label tensioning rollers during printing of the remainder of said end label, whereby machine readable indicia may be printed on the end label while said label is held in tension between said label advancing rollers and said label tensioning rollers, and

roller drive means, connected to both said label advancing rollers and said label tensioning rollers, for rotation thereof in synchronization.

4,375,190

PRINTING PRESS HAVING A PLURALITY OF PRINTING STATIONS

Emanuel Quinci, Dix Hills, and Clement R. Konars, Glen Cove, both of N.Y., assignors to Halm Instrument Co., Inc., Glen Head, N.Y.

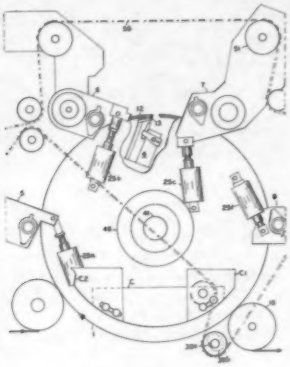
Filed Jul. 3, 1980, Ser. No. 165,711
Int. Cl.³ B41F *5/18*
U.S. Cl. 101—177 **3 Claims**

1. In a printing press of the type having a frame, a large paper carrying impression cylinder drum mounted on the frame and a plurality of printing stations mounted on the frame and spaced around the drum:

means to positively grip papers on said drum comprising at least one gripper having a stationary finger and a second finger reciprocatable with respect to the stationary finger, and cam means connected to operate the reciprocatable finger to grip a paper as it is fed onto the drum, the reciprocatable finger being spring loaded to absorb shock,

wherein each printing station has a printing roller normally in contact with said drum, means to pivotally mount the printing rollers on the frame,

means to pivotally move the printing rollers with respect to the surface of the drum and means to detect a missing paper comprising an electrical circuit completed by



contact between the stationary finger and the reciprocatable finger in the absence of a paper between them insulating said fingers from each other, each printing station having a plurality of inking rollers,

and a timing belt connected to drive the inking rollers independently of the printing rollers.

4,375,191

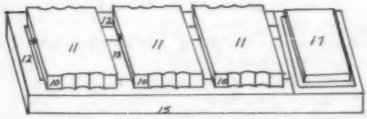
ONE-PIECE, ALL-PLASTIC REPRODUCING STAMP AND TROUGH HOLDING UNIT

Avis M. Dickey, LaGrange County, Ind., assignor to Dickey, Inc., South Milford, Ind.

Filed Feb. 2, 1981, Ser. No. 231,224

Int. Cl.³ B41K *1/04, 1/54, 1/58*

U.S. Cl. 101—333 **1 Claim**



1. A unitized stamp set comprising, in combination:

(a) a plurality of generally rectangular reproducing stamps, each having upper and lower generally horizontal surfaces and generally vertical side surfaces extending between said upper and lower horizontal surfaces, each said upper horizontal surface being substantially flat; each said lower horizontal surface comprising a raised face containing the image to be reproduced by said stamp; an opposing pair of said vertical side surfaces being provided with a plurality of corrugated, rounded digital indentations which facilitate manipulation of said reproducing stamp; each said stamp being formed of a one piece rigid opaque synthetic thermoplastic material;

(b) a holding trough storage member having at least one elongated trough therein of a width smaller than the width of the individual reproducing stamps, said trough being bounded by a support surface so as to support said lower horizontal surfaces of a plurality of reproducing stamps in side by side relation with the ink receiving raised faces thereof extending into said trough and out of contact with the walls of said trough; said storage member also being provided with an ink pad member; said storage member being manufactured of a unitary, rigid, opaque, thermoplastic material and of a generally rectangular shape, one of the sides of said holding member being downwardly extended perpendicular to said reproducing stamp supporting surface of said storage member and being provided with means for attaching said extended side to a wall surface so as to enable said storage member to be affixed to a wall surface.

4,375,192

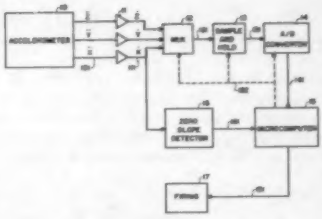
PROGRAMMABLE FUZE

Patrick A. Yates, China Lake; Richard M. Swenson, and George N. Hennings, both of Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1981, Ser. No. 250,978

Int. Cl.³ F42C *11/06*

U.S. Cl. 102—215 **6 Claims**



1. A programmable fuze for initiating a warhead detonation upon a crossing of one of four threshold values comprising:

means for sensing deceleration of the warhead after impact and outputting deceleration signals;

means for integrating the deceleration signals and outputting velocity component signals;

means for sequentially transmitting one multiplexed velocity component signal;

means for digitizing the multiplexed velocity component signal and outputting a velocity component data signal;

a zero-slope detector for determining the occurence of a constant velocity and outputting a zero-slope signal indicating a change in target density;

means for processing, controlling and outputting a detonation signal; and

a firing means for receiving the detonation signal and for initiating the detonation of the warhead.

4,375,193

MONORAIL GUIDEWAY ASSEMBLY

Donald P. Sullivan, Burnsville, Minn., assignor to Universal Mobility, Inc., Salt Lake City, Utah

Filed May 29, 1980, Ser. No. 154,334

Int. Cl.³ B61B *13/04*

U.S. Cl. 104—118 **9 Claims**

8. A monorail guideway assembly which is suspendible upon support columns for supporting a vehicle having support wheels and control wheels, the monorail guideway assembly comprising:

a pair of laterally spaced and generally parallel support members, the outer sides of said support members comprising a running surface for said control wheels;

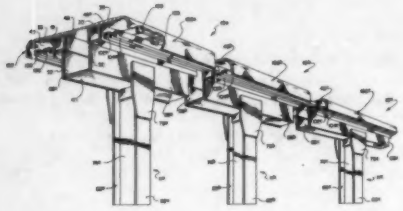
a plurality of tie bars joining the parallel support members one to the other at spaced locations;

running surface means mounted upon each parallel support member, said running surface means defining parallel tracks for said support wheels, and the width of said running surface means extending beyond the outer sides of

the parallel support members so as to define overhangs on each side of the guideway assembly;

a removable cover plate placed between said parallel tracks and supported by said tie bars;

truss means mounted below said parallel support members and cooperating with said running surface means and support members to define a hollow interior space of the guideway assembly;



a plurality of diaphragm plates mounted inside said truss means;

a plurality of electrical bus bars secured beneath the overhang of each said running surface means; and

skirt means attached to the outer edges of the overhang of each said running surface, said skirt means bending downward so as to form a smoothly curved shoulder.

4,375,194

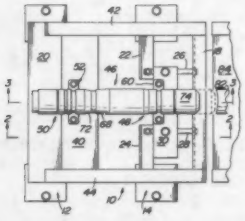
EXTENSIBLE DRIVE SHAFT

Peter H. Rohrbach, Nazareth, Pa., assignor to S I Handling Systems, Inc., Easton, Pa.

Filed Nov. 24, 1980, Ser. No. 209,562

Int. Cl.³ B61B *13/12*

U.S. Cl. 104—166 **12 Claims**



1. An extensible drive shaft assembly for use in connection with a driverless vehicle conveyor system wherein such vehicles ride on rails and have a drive wheel in contact with a drive shaft, the drive shaft assembly comprising a pair of rails, first and second telescoping drive shafts parallel to said rails, said first and second drive shafts being coaxially aligned and disposed end-to-end, motor means coupled to the first shaft for extending it in an axial direction, another motor means connected to the second shaft for rotating the second shaft about its longitudinal axis, means coupling said shafts so that said second shaft rotates said first shaft in all positions of the first shaft, and a frictional engageable end portion on a free end of said first shaft.

4,375,195

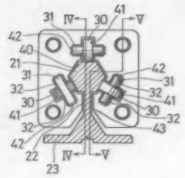
CARRYING DEVICE WITH SLIDERS AND RAIL

Nobuyuki Tsuboi, 2-1, Okayama 5-Chome, Shijonawate, Osaka 575, Japan

Filed Mar. 9, 1981, Ser. No. 241,815

Int. Cl.³ B61F *9/002*

U.S. Cl. 104—246 **12 Claims**



1. A carrying device comprising:

(a) a guide rail comprising a head, a base and a web disposed intermediate to said head and said base; and

(b) at least one slider to run along said rail to carry a load in a longitudinal direction of said rail, said at least one slider having a plurality of substantially U-shaped thin members layered in said longitudinal direction of said rail to form a substantially channel-shaped casing with an outer periphery, an inner periphery and a slit through which said inner periphery and said outer periphery communicate with each other, said inner periphery of said casing defining a central aperture in said casing, said inner periphery having a plurality of radiately extending recesses extending radiately from said inner periphery, said at least one slider having a plurality of rollers, each roller being disposed in a respective one of said radiately extending recesses and being adapted to rotate freely in said longitudinal direction of said rail in relation to said casing, said head and web of said rail being loosely inserted through said central aperture and slit of said casing respectively, said rail head being in an engaging relation to said casing central aperture, said rollers being adapted to make freely rolling contact with said rail head.

4,375,196

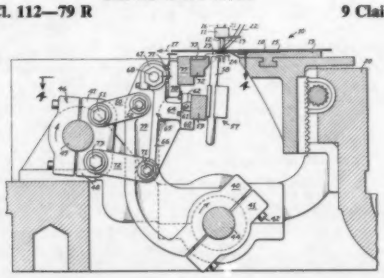
CUTTING MECHANISM FOR CUT PILE TUFTING MACHINE

Max M. Beasley, Lookout Mountain, Ga., assignor to Tuftco Corporation, Chattanooga, Tenn.

Filed Oct. 19, 1981, Ser. No. 312,875

Int. Cl.³ D05C *15/24*

U.S. Cl. 112—79 R **9 Claims**



1. In a cut pile tufting machine having means for supporting the base fabric for longitudinal movement in a feeding direction through the machine, a plurality of transversely spaced reciprocal needles for introducing yarns through one side of the base fabric to form loops, a looper hook for each needle

mounted on a transverse hook bar, a looper rocker arm supporting the hook bar for reciprocal movement on the other side of the base fabric, and looper drive means for reciprocally moving the rocker arm to cause the looper hooks to cooperate with the corresponding needles for seizing the yarn loops from the needles, a loop cutting apparatus comprising:

(a) a lever member having a pivotal portion and driven portion spaced from said pivotal portion,

(b) journal means pivotally connecting said pivotal portion to the looper rocker arm at a transverse pivotal axis spaced a proximal distance from the feeding path of the base fabric and spaced longitudinally from the looper hook a distance substantially greater than said proximal distance,

(c) a transversely extending, elongated knife bar mounted on said lever member,

(d) a knife for each looper hook mounted on said knife bar for cooperative engagement with a corresponding looper hook for cutting a loop thereon, and

(e) knife drive means operatively connected to said driven portion for reciprocally swinging said lever member about said pivotal axis synchronously with the movement of the looper rocker arm.

4,375,197

METHOD FOR MAKING A HANDCRAFTED PILE RUG AND THE RESULTING PRODUCT

Betty R. Hinson, 5319 Milford Rd., Charlotte, N.C. 28210

Division of Ser. No. 61,281, Jul. 7, 1979, Pat. No. 4,275,515. This application Feb. 2, 1981, Ser. No. 230,316

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—266.2 **6 Claims**

1. A method of making handcrafted pile rugs comprising

(a) mounting a backing fabric in an outstretched condition,

(b) positioning across the outstretched backing fabric an elongate pile forming guide having a series of spaced upstanding teethlike projections,

(c) looping a pile yarn around one of the upstanding projections of the pile forming guide and then passing the yarn through the backing fabric and forming a knot to thus form a pile loop secured to the backing fabric,

(d) repeating step (c) at successive spaced locations along the elongate pile forming guide until a row of pile loops has been formed across the backing fabric, and the step of passing the yarn through the fabric and forming a knot comprising penetrating the backing fabric with the yarn at four closely spaced locations: first downwardly and then upwardly through the fabric, then downwardly while forming a loop on the upper surface of the fabric between the second and third locations where the yarn penetrates the fabric, then passing the yarn upwardly through the fabric at a fourth location and directing the yarn under the loop formed on the upper surface of the fabric, and then pulling the yarn tight to form a knot,

(e) removing the guide from the thus formed row of pile loops,

(f) repositioning the guide alongside the previously formed row of pile loops, and

(g) repeating steps (c) and (d) to form another row of pile loops alongside the previously formed row.

4,375,198

HEMSTITCHING METHOD OF SEWING MACHINE

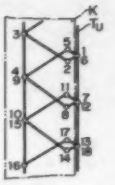
Susumu Hanyu, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,152

Claims priority, application Japan, Jan. 21, 1980, 55-4516

Int. Cl.³ D05B *1/20*

U.S. Cl. 112—269.1 **3 Claims**



1. A method of hem-stitching a fabric by a zigzag sewing machine having means for vertically and laterally reciprocating a needle cooperating with upper and lower threads, and means for feeding the fabric in two opposite directions to form lock-stitches with said threads, said method comprising the periodical steps of:

producing a fixing first stitch at one point adjacent to an edge of the fabric, with feeding the fabric in one direction while laterally moving the needle a short distance away from said one point;

producing a second stitch with feeding the fabric in the opposite direction while laterally moving the needle a larger distance away from said one point;

producing a third stitch with feeding the fabric in the one direction without lateral movement of the needle;

producing a fourth stitch with feeding the fabric in the opposite direction while laterally moving the needle about the larger distance towards said one point;

producing a fixing fifth stitch with feeding the fabric in the one direction while laterally returning the needle about said short distance into said one point; and

producing a sixth stitch with feeding the fabric in the one direction without lateral movement of the needle to a subsequent point adjacent to the edge of the fabric.

4,375,199

SUBMERSIBLE OR SEMI-SUBMERSIBLE STRUCTURES

Christopher Graeme-Barber, and Donald S. Painter, both of Cambridge, England, assignors to United Wire Group p.l.c., Edinburgh, England

Continuation-in-part of Ser. No. 25,568, Jan. 11, 1979, abandoned. This application Feb. 6, 1981, Ser. No. 232,201

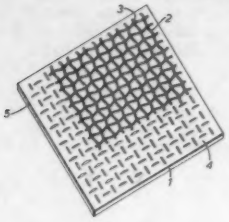
Claims priority, application United Kingdom, Jan. 11, 1978, 996/78

Int. Cl.³ B63B *59/02*

U.S. Cl. 114—222 **28 Claims**

1. A submersible or semi-submersible anti-fouling structure which comprises a layer of a water-insoluble, inert carrier matterial and embedded in said material, a layer of thin flexible woven wire mesh comprising wires of copper or a copper alloy, the mesh size being in the range 3 to 60 mesh per inch, and wherein the woven wire mesh comprises warp and weft wires forming knuckles at their crossover points, the knuckles being upstanding from the two opposed faces of the mesh layer, said mesh layer being completely buried in the material except for all the knuckles on one face only of the mesh layer, all said knuckles being exposed at an outer surface of the layer to provide thereon a multiplicity of tiny, regularly-spaced, discrete evenly-sized metal areas in the inert material continuum outer surface, the said areas being spaced by 0.25 to 7 mm., the total area of the spaced metal areas being between 13 and 50% of the total area of the outer surface of the layer, and

wherein the knuckles on the other face of the mesh layer are buried in said layer, and wherein said outer surface of the layer



is accessible to sea water and the multiplicity of tiny regularly-space metal areas thereon retard or prevent marine growth on said outer surface.

4,375,200

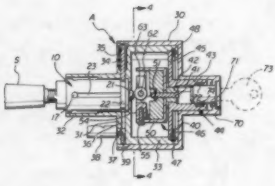
ANTITHEFT DEVICE

Gilbert A. Bertani, 6000 Bissonnet #275, Houston, Tex. 77081, and Mary L. Vandiver, 1055 Fondren #222, Houston, Tex. 77063

Filed Nov. 21, 1980, Ser. No. 208,926

Int. Cl.³ B60R *25/00*; E05B *45/00, 65/12*

U.S. Cl. 116—8 **13 Claims**



1. An antitheft device adapted for attachment to the valve stem of an inflated vehicle tire comprising:

housing means;

plunger means including a plunger engageable with the valve core of said valve stem and axially movable relative thereto between a first terminal position not interfering with the closure of said valve core and a second terminal position forcing said valve core to an open position releasing air from said tire; and

actuator means carried within said housing means including a cam member, radially movable with respect to the longitudinal axis of said plunger, in response to rotation of said vehicle tire, from a passive position to an active position forcing said plunger toward said second terminal position.

10. An antitheft device adapted for attachment to the valve stem of an air-inflated vehicle tire comprising:

a plunger assembly threadedly connected to said valve stem and including a plunger engageable with the valve core of said valve stem axially movable relative thereto from a first position not interfering with the closure of said valve core to a second position forcing said valve core to an open position releasing air from said tire;

an actuator assembly including a cam member mounted for radial movement with respect to the longitudinal axis of said plunger member and movable in response to rotation of said vehicle tire from a passive position to an active position engaging and forcing said plunger to said second position;

a housing assembly for surrounding said plunger assembly and said actuator assembly preventing access thereto; and

a locking assembly selectively locking said housing assembly around said plunger and actuator assemblies.

4,375,201

FIXING APPARATUS

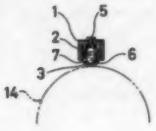
Chiaki Kato, Osaka, Japan, assignor to Sumimoto Electric Industries, Ltd., Osaka, Japan

Filed May 11, 1981, Ser. No. 262,245

Claims priority, application Japan, May 13, 1980, 55-63133

Int. Cl.³ B05C *11/105*

U.S. Cl. 118—60 **7 Claims**



1. An apparatus for fixing a toner image by transporting a toner image bearing material as it passes between a heated rotating fixing roll and a compression roll comprising: a stationary porous tube of tetrafluoroethylene resin having sealed ends and a release agent therein, said tube being disposed in contact with said fixing roll and being disposed along an axial direction of said fixing roll, said release agent being applied onto a surface of said fixing roll through open pores in said porous tube confronting said fixing roll, said pores in said tube not confronting said fixing roll being sealed.

4,375,202

APPARATUS FOR COATING PAPER WEBS

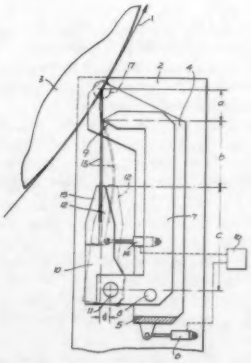
Balthasar C. Miller, Eugen-Bolz-Str. 12, Reutlingen, Fed. Rep. of Germany (FRG-7410)

Filed May 5, 1981, Ser. No. 260,747

Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017274

Int. Cl.³ B05C *11/04*

U.S. Cl. 118—117 **5 Claims**



1. Apparatus for coating paper, comprising:

a frame mounted in a support means so as to be pivotable about a first pivot axis and capable of being set in selectable positions;

a holder mounted in said frame so as to be pivotable about a second pivot axis, which second pivot axis lies parallel to the first pivot axis;

a clamping device for clamping at least one doctor blade in the vicinity of one of its ends, which clamping device is

mounted in said holder so as to be pivotable about a third pivot axis and is capable of being set in selected positions, said third pivot axis lying parallel to the first pivot axis;

said holder includes a support body which supports the doctor blade in its operating position, where it has two opposite bends, on its side opposite the paper web at a point between its free end and its end which is clamped in the clamping device; and

for the distance (a) of the free end of the doctor blade from the line of contact with the support body, for the distance (b) of this line from the point where the doctor blade projects from the clamping device, for the distance (c) of this projection point from the third pivot axis and for the distance (d) of the third pivot axis from the plane defined by said line of contact and said first pivot axis,

the conditions $a+b \leqq c$ and $d < 500$ mm

hold true.

4,375,203

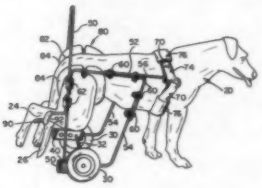
PROSTHETIC CART FOR ANIMALS

Lincoln J. Parkes, 532 Newtown Rd., Berwyn, Pa. 19312

Filed Jun. 11, 1981, Ser. No. 272,688

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—1 **11 Claims**



1. A mobile orthosis for a four legged animal such as a dog having injured rear quarters, comprising:

(a) a cart to which the animal is to be harnessed, the cart being movable on wheels and being attachable to the animal's thorax such that in use the animal can move itself and the cart under power of its front quarters;

(b) a hip support member, adjustably mounted upon the cart, for carrying the animal's rear quarters at a natural position with respect to the thorax; and,

(c) shin support member for the animal's rear legs, mounted upon the cart and adjustable vertically thereupon, independent of the adjustment of the hip support means, whereby at least a part of both the animal's rear legs are carried above a natural position thereof, permitting movement of the cart free of the rear quarters.

4,375,204

INTAKE DEVICE FOR INTERNAL COMBUSTION ENGINE

Tadahiro Yamamoto, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 27, 1980, Ser. No. 163,909

Claims priority, application Japan, Jul. 9, 1979, 54-94367[U]

Int. Cl.³ F02B *77/00*

U.S. Cl. 123—52 M **6 Claims**

1. An intake device for an internal combustion engine, comprising:

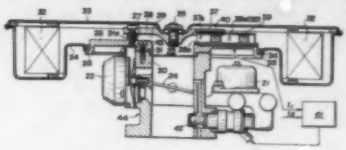
a throttle barrel having a throttle valve located therein;

an outwardly extending flange disposed upstream of said throttle valve at the inlet end of said throttle barrel;

an air cleaner assembly mounted on said flange;

a saucer-like member cooperating in spaced relationship with said flange to define a ring-shaped intake passage within said air cleaner assembly through which air is inducted into the inlet end of said throttle barrel; and

a single air flow meter assembly mounted between said flange and said saucer-like member and including (a) a single duct through which a fraction of the air inducted into said throttle barrel flows, said duct having a single inlet and a single outlet and disposed in said ring-shaped intake passage and having said single outlet located in a portion of said ring-shaped intake passage adjacent to said throttle barrel and (b) a Karman eddy type sensor disposed within said single duct.



4,375,205

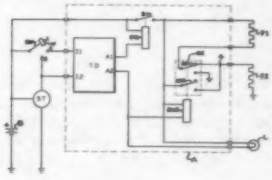
GLOW PLUG CONTROL CIRCUIT

Samuel J. Green, Temperance, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Jul. 3, 1980, Ser. No. 165,730

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 H **3 Claims**



1. A circuit for use in preheating a diesel engine during starting, said engine having an associated power supply at a predetermined voltage, said circuit comprising first and second glow plugs each having a filament of a predetermined resistance and each having a maximum operating voltage less than such predetermined voltage, said filaments overheating to failure under continuous operation at such predetermined voltage, first switch means having a first position electrically connecting said first and second glow plug filaments in series and a second position electrically connecting said first and second glow plug filaments in parallel, second switch means which, when closed, applies power from the power supply through said first switch means to said filaments, and control means including means for closing said second switch means for a time period from the beginning of a preheat time prior to starting the diesel engine to the end of a predetermined afterglow time period after engine starting required for smooth engine idling and for minimizing engine noise and white smoke emission, means for maintaining said first switch means in said second position during such preheat time for a time period which varies as an inverse function of such predetermined power supply voltage and equals substantially the time required to raise the temperature of said filaments to a temperature sufficient for diesel engine starting and for subsequently changing said first switch means to said first position to reduce the voltage applied to each of said filaments during a prestart time period prior to engine starting and during such afterglow period, and means for opening said second switch means at the end of such afterglow period.

4,375,206

FUEL PRIMER AND ENRICHMENT SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Gene F. Baltz, Lake Villa, and Paul W. Breckenfeld, Winthrop Harbor, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

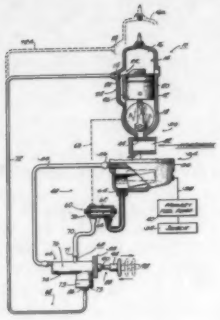
Filed Mar. 27, 1980, Ser. No. 134,696

Int. Cl.³ F02M *1/16*; F02N *17/00*

U.S. Cl. 123—187.5 R **11 Claims**

1. An engine comprising a combustion chamber having a

fuel port, a primary fuel delivery means adapted for connection to a source of fuel and communicating with said combustion chamber for introducing fuel from the fuel source into said combustion chamber, and a secondary fuel delivery means including a fuel pump adapted to be connected to a source of fuel, a fuel return line adapted for communication with the source of fuel, and means for selectively communicating said



fuel pump with said fuel return line and with said fuel port independently of said primary fuel delivery means, said means for selectively communicating said fuel pump with said fuel return line and with said fuel port including means operative independently of said fuel pump for pumping fuel to said fuel port.

4,375,207

TOP SPEED LIMITER FOR AN INTERNAL COMBUSTION ENGINE

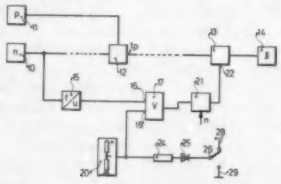
Albrecht Sieber, Böblingen; Peter Schülzke, Hemmingen; Dieter Günther, Murr, and Ulrich Steinbrenner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 954,953, Oct. 26, 1978, abandoned. This application Aug. 18, 1980, Ser. No. 179,184

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800433

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—333 **11 Claims**



1. A top speed limiter in combination with a fuel injection system for the breaking-in period of an internal combustion engine, a means for generating a pulse train which indicates engine speed, wherein the system includes a fuel supply means which receives the pulse train, and wherein the top speed limiter comprises:

a timing circuit means for generating a selectable variable reference speed signal, wherein the circuit means includes a manually adjustable switch;

means for adjusting said timing circuit means on the basis of an elapsed mileage signal;

comparator means for comparing the reference speed signal with the pulse train and for generating a suppress command signal; and

suppressor means for receiving the pulse train and the suppress command signal, wherein the suppressor means suppresses the pulse train to the fuel supply means to inhibit the supply of fuel to the system on receiving the suppress command signal.

4,375,208

IDLING SPEED CONTROLLING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

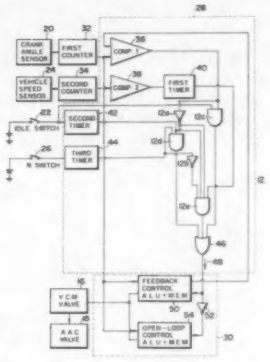
Syoji Furuhashi, and Kazuhiro Higashiyama, both of Kanagawa, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Mar. 26, 1981, Ser. No. 247,788

Claims priority, application Japan, Mar. 27, 1980, 55-38226

Int. Cl.³ F02D *9/02*

U.S. Cl. 123—339 **18 Claims**



1. An idling speed control system for an internal combustion engine of an automotive vehicle having intake air flow quantity control means located in an auxiliary passage beside an intake air passage, the control means actuated in response to a pulse signal with a calculated duty ratio, in which either feedback control or open-loop control is selectively carried out; in the mode of feedback control, the control operation being determined on a basis of actual engine speed and a reference engine speed so that a deviation of the actual engine speed from the reference engine speed is reduced substantially toward zero and in the mode of open-loop control, the control operation being determined on a basis of a cooling water temperature of the engine, the system comprising:

(a) a first means for determining the reference engine speed with respect to the cooling water temperature of the engine;

(b) a second means for discriminating engine operating conditions to determine when to perfrom feedback control and when to perform open-loop control;

(c) a third means for determining a basic duty ratio of a pulse signal outputted from the system on a basis of cooling water temperature, the basic duty ratio of the pulse signal being a basic control ratio of open-loop control and feedback control operations;

(d) a fourth means for determining a first correction value for combining with the basic duty ratio obtained from said third means on a basis of an actual engine speed and reference engine speed, said fourth means being operative after said second means determines to perform feedback control operation;

(e) a fifth means for determining a second correction value for combining with the basic duty ratio obtained from said third means on a basis of an actual engine speed and a reference engine speed;

(f) a sixth means for decreasing the second correction value gradually; and

(g) a seventh means for additively combining the duty ratio

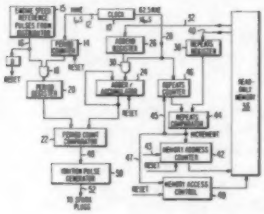
obtained from said third, fourth and fifth means and outputting a pulse signal of a constant frequency and amplitude having the duty ratio obtained from said third, fourth and fifth means into the intake air quantity control means according to the control operation mode, whereby the output engine speed gradually nears the reference engine speed without overshooting so that the reference engine speed can be set lower and engine hunting and stalling can be prevented.

4,375,209

DIGITAL TIMING SYSTEM FOR SPARK ADVANCE

Joseph O. Sinniger, Pennington, and Anthony D. Robbi, Hopewell, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,454
Int. Cl.³ F02P 5/04
U.S. Cl. 123—416 **9 Claims**



1. Means to set ignition spark timing in accordance with engine speed, comprising:

a source of engine speed reference pulses having a period corresponding with whatever speed the engine is running,

a source of clock pulses,

a counter responsive to said clock pulses during the period between two engine speed refence pulses to provide an engine reference period number, the value of which represents the time period between ignitions,

a memory having successive memory locations each storing an addend quantity and a repeats number,

an adder unit, including an accumulator, operative to access said memory and add each addend quantity to the contents of the accumulator repeatedly a number of times equal to the corresponding repeats number, and

a comparator producing an ignition firing pulse when the contents of said accumulator corresponds with the value of the reference period number provided by said counter.

4,375,210

AIR-FUEL RATIO CONTROL SYSTEM

Yoshiaki Ohara, and Masaaki Ohgami, both of Musashino, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

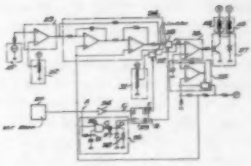
Filed Dec. 30, 1980, Ser. No. 221,462
Claims priority, application Japan, Jan. 31, 1980, 55-10678
Int. Cl.³ F02M 7/02
U.S. Cl. 123—440 **5 Claims**

1. In an air-fuel ratio control device for an air-fuel mixture supply means of an internal combustion engine having an intake passage, a throttle valve in the intake passage, an exhaust passage, first detector means for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage, and on-off electromagnetic valve means for correcting the air-fuel ratio of the air-fuel mixture supplied by an air-fuel mixture supply means, the improvement comprising

electronic control means for controlling the air-fuel ratio to a value approximately to the stoichiometric air-fuel ratio, comprising comparator means for comparing an output signal of said first detector means with a set value, an integrating circuit and driving circuit means for producing a driving output for driving said electromagnetic valve means in dependency on an output signal of said integrating circuit,

second detector means for detecting the condition of operation of said internal combustion engine and producing a detected signal during the wide open condition of said throttle valve,

fixed signal generating circuit means for fixing the air-fuel ratio to a predetermined duty ratio for said driving circuit means



switch means adapted to be operated by said detected signal of said second detector means for rendering the output signal of said integrating circuit ineffective and for feeding said fixed signal to said driving circuit means,

actuating means for actuating said switch means, said actuating means being an R.S. flip-flop,

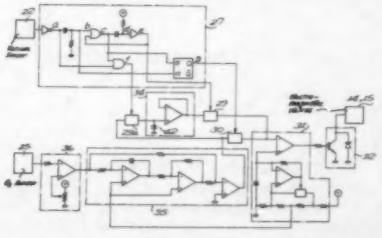
delay circuit means for delaying the operation of said switch means being connected with one of the inputs of said R.S. flip-flop, whereby said electromagnetic valve means is operated at a predetermined duty ratio after said wide open condition of the throttle valve continues a predetermined period.

4,375,211

AIR-FUEL RATIO CONTROL SYSTEM

Yoshiaki Ohara, Musashino, and Makoto Shikata, Musashimurayama, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Dec. 30, 1980, Ser. No. 221,463
Claims priority, application Japan, Mar. 7, 1980, 55-29335
Int. Cl.³ F02M 7/24
U.S. Cl. 123—440 **12 Claims**



1. In an air-fuel ratio control system for an internal combustion engine having a two-barrel carburetor comprising a primary carburetor and a secondary carburetor, an induction passage communicating with said two-barrel carburetor and said engine, a throttle valve provided in each of said primary and secondary carburetors, an exhaust passage communicating with the engine, a first detector for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage, an on-off electromagnetic valve for correcting the air-fuel ratio of air-fuel mixture supplied by said primary carbu-

retor, an electronic control circuit comprising a comparator for comparing an output signal of said first detector with a reference value, an integrating circuit operatively connected to said first detector, and a driving circuit for producing a driving output for driving said electromagnetic valve in dependency on an output signal of said integrating circuit for controlling the air-fuel ratio to a value approximately equal to the stoichiometric air-fuel ratio, the improvement wherein

a second detector constituting means for detecting a transition from heavy load condition of the engine to light load condition and producing a detected signal;

a memorizing circuit means for storing the output signal of said integrating circuit for feeding a stored signal to said driving circuit for providing a richer air-fuel ratio in the primary carburetor than at the heavy load condition;

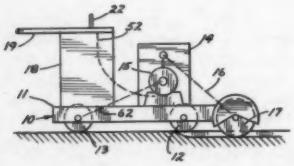
means comprising switches for rendering the output signal of said integrating circuit ineffective and for said feeding of said stored signal to said driving circuit; and

a switch actuating circuit means responsive to said detected signal of said second detector for actuating said switches for a predetermined period, such that the richer air-fuel mixture dependent on said stored signal is supplied through said primary carburetor to the engine at the transition from the heavy load condition to the light load condition.

4,375,212
CONCRETE SAWING MACHINE PROPULSION CONTROL APPARATUS

William R. Santschi, Los Angeles, Calif., assignor to Longyear Company, Minneapolis, Minn.

Filed Jan. 19, 1981, Ser. No. 226,116
Int. Cl.[3] B28D *1/04*
U.S. Cl. 125—14 15 Claims

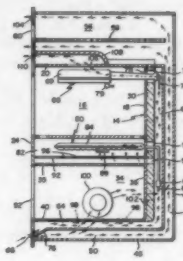


1. For a self propelled machine that has a frame, a power driven speed to the output shaft, ground engaging wheels mounted on the frame, a drive connection between the output shaft and at least one of the wheels, a power driven tool mounted on the frame for carrying out a work operation such as cutting, grinding or grooving concrete, masonary, pavement and the like, a vernier control assembly that is adjustably setable for controlling the speed of propulsion transmitted from the transmission to the at least one driven wheel and means connected between the vernier control assembly and the transmission that is operated in response to the setting of the vernier control assembly to change the transmission output shaft drive speed, characterized in that the above means includes manually operably means for overriding the vernier control assembly setting to vary the transmission output shaft speed when manually operated and when manually released discontinue the override of the vernier control assembly setting, the manually operable means including a movable transmission control connection connected to the transmission for controlling the transmission output shaft output speed, a manually movable lower movable between at least two positions and means for mounting the lever on the frame and interconnecting the vernier control assembly, the lever and transmission control connection for moving the control connection as the lever is moved between its position while the preselected vernier control assembly setting is maintained.

4,375,213
SELF-CLEAN OVEN

Wayne T. Kemp, Kutztown, and Domenick Saponara, Macungie, both of Pa., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 963,603, Nov. 24, 1978, abandoned.
This application Oct. 23, 1981, Ser. No. 200,301
Int. Cl.[3] A21B *1/26;* F24C *15/32*
U.S. Cl. 126—21 A 10 Claims



1. An oven comprising the combination of an oven compartment having top, bottom, back and side walls, a first burner in the oven compartment, an air chamber enclosing said top, bottom, back and side walls of the oven compartment, said air chamber having entrance opening at the front of the oven below the oven compartment and an exit aperture at the front of the oven above the oven compartment, an air cavity located beneath the oven compartment between the oven compartment and adjacent portions of said air chamber, said air cavity having apertured walls separating it from the adjacent portions of the air chamber, a burner box located between said bottom of said compartment and said air cavity, a second burner positioned in said burner box, a first duct located between said burner box and said air cavity, said first duct communicating with said burner box through a plurality of holes in the floor of said burner box for providing secondary combustion air to said second burner, a second duct located within said air chamber and extending from said entrance opening beneath said air cavity and upwardly along the back walls of said air cavity and compartment, said first and second burners extending into said second duct through respective apertures in said back wall of said compartment and the back wall of said burner box for receiving primary combustion air, said first duct communicating with said second duct for receiving said secondary combustion air, a plurality of blowers mounted on side walls of said air cavity for drawing in cooling air from said air chamber below said air cavity and for forcing said cooling air into said air chamber at the sides and back of said air cavity, said cooling air being substantially isolated from said primary and secondary air.

4,375,214
RADIANT FOR GAS HEATERS

Charles F. Wysong, Birmingham, Ala., assignor to Atlanta Stove Works, Inc., Atlanta, Ga.

Filed Mar. 6, 1981, Ser. No. 241,006
Int. Cl.[3] F24C *3/04;* F23D *13/12*
U.S. Cl. 126—92 AC 4 Claims

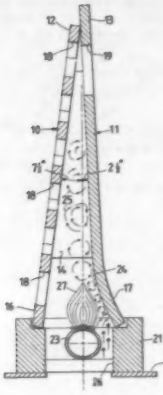
1. In a radiant for a gas heater having upwardly converging front and rear walls with means for introducing a gas between the lower portions thereof and having perforations in the front wall for emitting radiant heat resulting from combustion of the gas,

(a) said front and rear walls being formed of a fibrous aluminum silicate refractory board with the upper end portions thereof secured to each other and having spaced apart lower end portions,

(b) at least two spaced apart connector members formed of

a fibrous aluminum silicate refractory board and extending between and connecting said front and rear walls intermediate said upper and lower end portions, and

(c) means securing said upper end portions of said walls to each other and securing said connector members to adjacent portions of said front and rear walls to hold said lower end portions in fixed spaced relation relative to each other with the lower end portion of said rear wall extending downwardly and outwardly away from said front wall and defining a convexly curved inner surface adjacent said means for introducing a gas and in position to be contacted by upwardly moving burning gas and impart rotary motion thereto to produce maximum contact of the burning gas with said rear wall as said upwardly moving burning gas impinges on the inner surface of said rear wall.



4,375,215

STOVE FOR BURNING SOLID FUEL

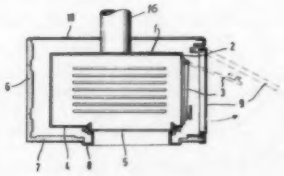
Erwin Koppe, Kirchenthumbacher Strasse 38, 8489 Eschenbach, Opf., Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,523

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 8002645[U]

Int. Cl.³ F23M *7/00*

U.S. Cl. 126—200 **2 Claims**



1. A stove for burning solid fuel comprising a combustion chamber in which said fuel is burned, said chamber having a front wall, along with a rear wall and two side walls arranged in a generally rectangular configuration, said front and rear walls each having a greater horizontal width than the horizontal width of said side walls, a cladding structure having a front wall along with a rear wall and two side walls arranged in a generally rectangular configuration, said walls of said cladding structure being spaced from the corresponding and respective walls of said chamber so as to define a space between said chamber and said cladding structure, said cladding structure and said chamber each having a top wall spaced from one another, said top wall of said cladding structure having air exit lattice means through which heated air exits from said stove, said stove having a bottom opening for introducing ambient air into said space between said chamber and said cladding structure such that said ambient air passes through said space between said chamber and cladding structure and is thereby heated before exiting from said air exit lattice means, said chamber having a fire door mounted on one of its side walls, said cladding structure having an access door mounted on one of its side walls, said fire door and access doors being generally aligned with one another to thereby provide access to said chamber for feeding fuel to said chamber, said one side wall of said cladding structure also having air exit openings at an upper portion thereof through which heated air exits from the stove, an inspection and viewing window in said front wall of said chamber and said front wall of said cladding structure, said window extending over the major portion of the breadth of said front walls of said chamber and cladding structure, whereby large logs may be fed into said chamber through said fire door in said chamber side wall while enabling use of a large window in said front wall of said chamber and cladding structure and thus affording good observation of the combustion process.

4,375,216

SOLAR COLLECTOR PANEL

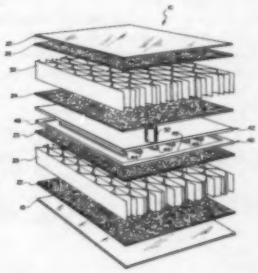
James D. Gessford, P.O. Box 87, Bancroft, Id. 83217

Continuation-in-part of Ser. No. 858,584, Dec. 8, 1977, Pat. No. 4,232,658. This application Sep. 24, 1980, Ser. No. 190,151

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—450 **6 Claims**



1. A solar collector panel comprising in combination:

first and second fiberglass matrices each saturated with a catalyzed liquiform resin;

a layer of honeycomb material having a plurality of individual cell structures bonded between said first and second fiberglass matrices so as to form a resinated honeycomb core between said matrices;

a layer of gel coat type material bonded to the surface of one of said first or second fiberglass matrices; and

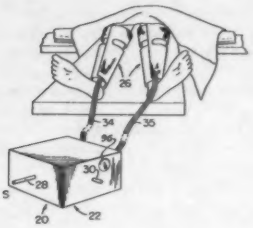
means for defining a plurality of fluid channels, said means being bonded to said gel coat type material and having a coefficient of thermal expansion essentially equal to the coefficient of thermal expansion of said fiberglass matrices.

4,375,217

COMPRESSION DEVICE WITH PRESSURE DETERMINATION

Edward J. Arkans, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jun. 4, 1980, Ser. No. 156,438
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—24 R **6 Claims**



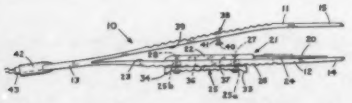
1. A device for applying compressive pressures against a patient's limb from a source of pressure, comprising:
   - a sleeve for placement about the patient's limb and having at least one inflatable chamber;
   - means for controlling intermittent inflation and deflation of said chamber;
   - first conduit means connecting the controlling means and said chamber;
   - second conduit means having two free ends and having one end communicating with the first conduit means at one of said free ends, upstream from said chamber and sleeve and downstream from, but adjacent to, said controlling means;
   - means for determining pressure communicating with said second conduit means at the second of said free ends; and
   - means for providing resistance against fluid flow passing through the second conduit means intermediate the first conduit means and the pressure determining means, said first conduit means communicating directly with said chamber at a location downstream from the connection of the second conduit means with the first conduit means whereby, by virtue of the location of said second conduit and pressure determining means, pressure in said chamber may be read directly but remotely therefrom without need of directly connecting a pressure determining means onto said chamber.

4,375,218

FORCEPS, SCALPEL AND BLOOD COAGULATING SURGICAL INSTRUMENT

Ernest M. DiGeronimo, 1060 NE. 120th St., Miami, Fla. 33161

Filed May 26, 1981, Ser. No. 266,847
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.17 **10 Claims**



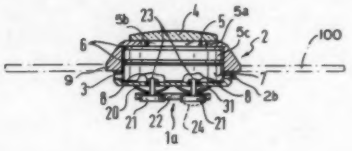
1. A composite tool such as a surgical instrument comprising,
   - a. forceps having spaced resilient elongated coacting legs,
   - b. a scalpel blade supporting assembly having a scalpel blade therein slidably mounted between the coacting legs of the forceps and normally disposed so that the scalpel blade is in a retracted concealed position relative said coacting legs,
   - c. said scalpel blade supporting assembly slidable relative the forceps to move the scalpel blade to and to hold the same in an extended cutting cutting position relative said coacting legs, and
   - d. releasable locking means on said scalpel blade supporting assembly detachably connectible to the spaced coacting legs of the forceps to convert the forceps into a holder for the scalpel blade when the scalpel blade supporting assembly moves the scalpel blade to the cutting position.

4,375,219

ELECTRODE FOR DETECTING BIOELECTRICAL SIGNALS

Walter Schmid, Fuchsweg 9, D-7911 Pfaffenhofen, 8000 München, Fed. Rep. of Germany

Filed Apr. 22, 1980, Ser. No. 142,741
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004126
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—639 **23 Claims**



1. An electrode assembly for bioelectrical use comprising a support, and at least two skin-contacting electrodes on said support connectable to a circuit responsive to bioelectrical signals, said electrodes each comprising a pair of spacedly juxtaposed plates insulated from one another and an electrolyte disposed between said plates, said plates being composed of a metal selected from Group IIIA of the Periodic Chart of the Elements, the spacing between said plates being between 1 and 4 times the thickness of said plates, said electrodes being disposed in laterally spaced relationship on said support and being at least partially received in an insulating material and projecting therefrom with the insulating material therebetween so as to enable at least one plate of each of the electrodes to contact the skin simultaneously, the electrode spacing being about 4 to about 10 mm, said electrodes being provided with means for electrically connecting them to circuitry for bioelectrical use.

4,375,220

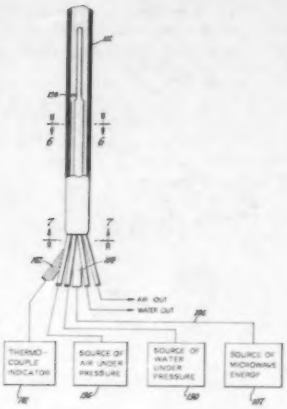
MICROWAVE APPLICATOR WITH COOLING MECHANISM FOR INTRACAVITARY TREATMENT OF CANCER

Fredrick M. Matvias, 405 McKinley, Grosse Pointe Farms, Mich. 48236

Filed May 9, 1980, Ser. No. 148,528
Int. Cl.³ A61N *1/40*
U.S. Cl. 128—804 **14 Claims**

1. Apparatus adapted for insertion into a body opening for microwave energy to internally develop heat for the treatment of body tissue comprising:
   - a source of microwave radiation;
   - an elongated jacket suited for insertion in a body opening, and first means in said jacket for providing microwave energy from said source to generate heat in body tissue;
   - means in said jacket forming at least one longitudinal chamber extending along said jacket having a thickness of about one millimeter in the direction of radiation; and
   - a source of cooling fluid, and means for continuously delivering said fluid to said at least one chamber in a first direction along said jacket, and then in the opposite direc-

tion along said jacket to form a fluid shield along said jacket having a thickness of about one millimeter for



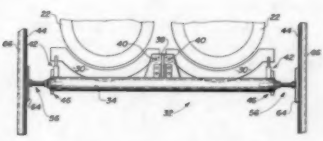
controlling the heat generated on the external surface of the jacket.

4,375,221

ADJUSTABLE SUPPORT FOR CONCAVES

Richard P. Bernhardt, Leola, and Everett C. Cowan, Jr., Parksburg, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Jun. 10, 1981, Ser. No. 272,222
Int. Cl.³ A01F *12/28*
U.S. Cl. 130—27 S **12 Claims**



7. In a combine having a frame supporting opposing side walls; a threshing rotor mounted on said frame for rotation about an axis of rotation; a concave supported on said frame in spaced proximity to said rotor; and a support member mounting said concave and extending substantially between said side walls, the improvement comprising:

adjustment means adjustably received within said support member and movably engaged with said opposing side walls for adjustably laterally positioning said concave with respect to said rotor by laterally positioning said support member relative to said opposing side walls, said adjustment means also permitting a movement of said support member parallel to said side walls to vary the spacing between said rotor and said concave by moving said concave toward and away from said axis of rotation.

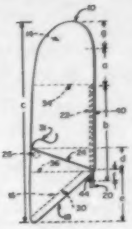
4,375,222

UMBRELLA COVER

Emanuel Dubinsky, 99 Kingston Ave., Yonkers, N.Y. 10704

Filed Dec. 24, 1980, Ser. No. 220,119
Int. Cl.³ A45B *25/18*
U.S. Cl. 135—33 C **12 Claims**

1. An umbrella cover comprising a sleeve of substantially pliable material having an upper end and a lower end, said lower end being open for receiving the canopy of an umbrella into said sleeve, said open lower end comprising a flap portion having an upper edge and a lower edge, said flap portion lower edge defining the bottom of said sleeve; an inner circumferential stiffening member within said sleeve interior, said stiffening member being disposed adjacent said flap portion upper edge and extending about the longitudinal axis of said sleeve; and a



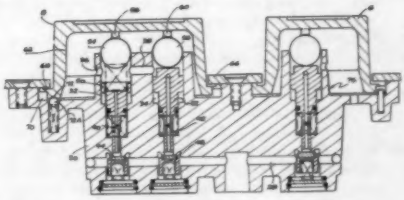
substantially rigid telescoping support rod member retainable within said sleeve and partially extending along said sleeve in the direction of said sleeve longitudinal axis; whereby said cover may be readily mounted upon said umbrella canopy with said support rod telescopically extended and coverage of said canopy completed by telescopic closure of said support rod.

4,375,223

DIAL OPERATED PRESSURE REGULATOR

Robert J. Baillie, Gladesville, Australia, assignor to Power Automotive Equipment Pty. Ltd., Australia

Filed Oct. 30, 1980, Ser. No. 202,132
Claims priority, application Australia, Nov. 5, 1979, PE1202
Int. Cl.³ F15B *13/042*
U.S. Cl. 137—116.5 **4 Claims**



1. A dial operated fluid pressure regulator for producing forward, hold and reverse signals in a fluid control circuit which in turn creates (a) forward, hold, and reverse conditions in a hydraulic circuit, said regulator comprising:

a body,

a pair of mutually adjacent parallel valve cylinders in the body,

a fluid inlet and fluid outlet for each valve cylinder connectable to said fluid control circuit,

a valve slidably located in each cylinder to influence the passage of fluid in the control circuit, the axial movement of one valve causing the forward signal in the circuit, the axial movement of the other valve causing the reverse signal in the circuit, and the movement of neither valve causing the hold signal in the circuit, wherein said one valve is an on/off valve and said other valve is a fluid pressure regulating valve, and

a dial mounted on the body, provided with a first face cam which causes axial movement of said one valve when the dial is rotated through a first sector and a second face cam which causes axial movement of the other valve when the dial is rotated through a second sector, said cams being

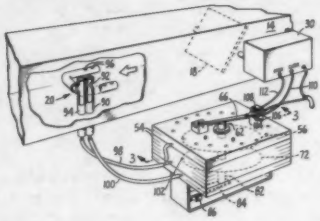
arranged to provide a null position reached by rotation of the dial between the two face cams.

4,375,224

AIR CONDITIONING CONTROL EQUIPMENT

R. W. Noll, Santa Rosa, Calif., assignor to Acutherm, Inc., Emeryville, Calif.

Filed Jan. 21, 1981, Ser. No. 227,146
Int. Cl.³ F16K *31/365*
U.S. Cl. 137—486 **2 Claims**



1. A pressure control for controlling the air flow in a duct of an air conditioning system comprising:

a first pair of plenum chambers;

a first diaphragm forming a common wall between the chambers of the first pair for developing a force proportional to the pressure differential between the chambers;

a second pair of plenum chambers;

a second diaphragm forming a common wall between the chambers of the second pair for developing a force proportional to the pressure differential between the chambers;

mechanical means coupling the diaphragms together for combining the forces;

spring means coupled to said mechanical means for opposing the combined force of the diaphragms;

electrical switch means coupled to the mechanical means for controlling an electrical circuit in response to the position of the mechanical means;

means coupled to the first pair of plenum chambers for applying to the first diaphragm a pressure differential which is a parameter of the static pressure in the duct,

means coupled to the second pair of plenum chambers for applying to the second diaphragm a pressure differential which is a parameter of the air velocity in the duct with the two pressure differentials connected in opposition to each other by the mechanical means, and

control means connected to the electrical switch means for altering fluid flow in the duct responsive to operation of the switch.

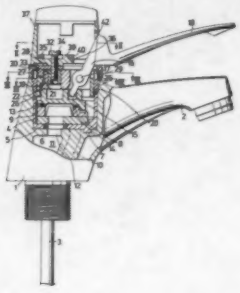
4,375,225

MIXING VALVE

Sven Andersson, Vattnäs, Sweden, assignor to F M Mattsson AB, Mora, Sweden

Filed Feb. 27, 1981, Ser. No. 238,899
Claims priority, application Sweden, Dec. 10, 1980, 8008688
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—625.17 **3 Claims**

1. A mixing valve of the single-lever type, comprising a valve housing (1) having a hot-water inlet and a cold-water inlet, a valve means including two valve plates (8,9) which are displaceable relative to one another; a displaceable and rotatable dogging means (14, 15, 19) which is controlled by said lever (18) and which, when the lever is swung in a vertical plane, is arranged to impart to the valve plates a relative displacement movement to restrict the flow of mixed hot and cold water through the mixing valve, and which when the lever is swung in a horizontal plane is arranged to rotate said plates (8,9) relative to one another such as to change the ratio of the hot and cold water flowing to a mixing chamber; and restricting means for restricting the movement of said lever, characterized in that a stop means (30) which can be set relative to the dogging means (19) in its direction of rotation and firmly locked thereto, is arranged to co-act with an abutment means (23') fixedly mounted relative said dogging means, to selectively restrict rotation of the dogging means towards a position in which the ratio of hot water to cold water entering the mixing chamber is increased to a desired value, said stop means (30) being mounted on a sleeve means (28) surrounding the dogging means (14, 15, 19), said sleeve means being rotatable and capable of being locked to the dogging means in selected positions, by means of locking means (32).

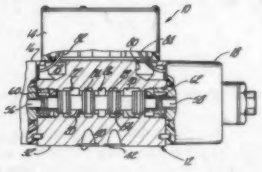


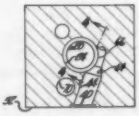
4,375,226

VALVE BODY FOR SOLENOID OPERATED DIRECTIONAL VALVE

Ronald L. Loup, Clarkston, Mich., assignor to Double A Products Company, Manchester, Mich.

Filed Apr. 28, 1980, Ser. No. 144,546
Int. Cl.³ F16K *11/07, 27/04*
U.S. Cl. 137—625.65 **5 Claims**





5. A solenoid operated directional valve comprising a valve body provided with a bore that has axially spaced annuli, a mounting surface with ports of uniform diameters arranged therein in a pattern of a standard configuration, and ducts extending from each of said ports to different ones of said annuli so that flow passageways for flow of hydraulic fluid can extend from each one of said ports through portions of said bore to another one of said ports, a spool mounted for move-

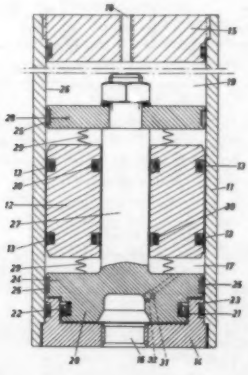
ment axially in said bore to selected positions for controlling the flow of hydraulic fluid through said passageways, and at least one solenoid mounted on said body and operatively associated with said spool for effecting shifting of the latter to said selected positions, characterized in that the effective cross-sectional areas throughout the length of each passageway are essentially the same when the spool is in a selected position to maintain that passageway open, and wherein said pattern of ports is generally triangular in shape and contains a pressure P-port at the apex of the triangle, at least one tank T-port at at least one of the base corners of the triangle, and a pair of line A- and B-ports in the opposite sides of the triangle, each port being in communication respectively with an associated one of said annuli, and the annuli associated with the P-port and the A- and B-ports have widths substantially less than the diameters of their associated ports, and characterized in that the ducts leading from said A- and B-ports are arranged so that their axes are essentially tangential to their associated annuli and the opening from each duct into its annulus has an effective cross section substantially the same as the effective cross section of the duct, and in that the ducts leading from said A- and B-ports are drilled ducts each having two steps, the smaller first step of each such drilled duct having a diameter substantially equal to the width of the associated annulus, the larger second step of each such drilled duct having a diameter substantially equal to the diameter of the associated port, and the hole defined by the intersection of the first and second step portions of each duct with the associated annulus having a configuration so that the effective area of the hole is essentially the same as the effective area of the associated port.

4,375,227

HYDRAULIC DEVICE ESPECIALLY A HYDROPNEUMATIC ACCUMULATOR

Gustav Wegscheider, Nya Stadens Torg 13, Lidköping, Sweden (531 13)

Filed Jan. 28, 1981, Ser. No. 229,280
Claims priority, application Sweden, Feb. 4, 1980, 8000853
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—31 **8 Claims**



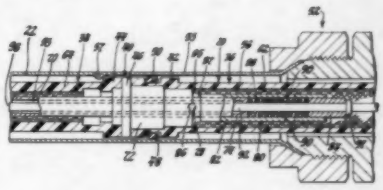
1. A hydropneumatic accumulator comprising a cylinder, a piston freely axially displaceable within said cylinder and dividing said cylinder into a hydraulic fluid chamber and a gas chamber at opposite ends of said piston, an end wall closing the end of the cylinder adjacent said hydraulic fluid chamber, an inlet part through said end wall for hydraulic fluid, a first sealing member in said hydraulic fluid chamber adapted for axial displacement with respect to said piston, means to limit said axial displacement of said first sealing member, a second sealing member cooperatively associated with said first sealing member for providing relative axial displacement between said sealing members and a flow channel between said inlet part and said hydraulic fluid chamber, and seal means between said first and second sealing members to permit flow of hydraulic fluid through said channel from said inlet part to said hydraulic fluid chamber, and to prevent backflow of hydraulic fluid from said hydraulic fluid chamber to said inlet part when the pressure on the hydraulic fluid chamber side of said seal exceeds the inlet pressure.

4,375,228

TWO-STAGE FLOW RESTRICTOR VALVE ASSEMBLY

Richard E. Widdowson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1981, Ser. No. 237,246
Int. Cl.³ F16K *31/163*; F15D *1/02*
U.S. Cl. 138—46 **3 Claims**



1. A two-stage flow restrictor valve assembly adapted to be inserted in a fluid flow line to reduce the flow therethrough in two stages, said valve assembly comprising a valve body having an inlet side adapted to receive fluid at an upstream point in the line and an outlet side adapted to deliver the fluid at a downstream point in the line, a hollow tube fixed in said valve body between said inlet side and outlet side, said tube having an opening continuously connecting said inlet side through said tube to said outlet side, valve means movable between an open position fully uncovering said opening and an orifice effecting position partially closing said opening to define a small effective orifice of predetermined size, an abutment engaged by said valve means to determine said orifice effecting position, a spring operatively arranged between said tube and valve means normally holding the latter in said open position and resisting movement thereof to said orifice effecting position, said valve means having an upstream side exposed to fluid pressure on said inlet side and passage means communicating this same pressure with a downstream side thereof whereby said sleeve valve means is continuously pressure balanced, a rod engaging with said valve means and extending with substantial annular clearance through said tube so as to be exposed at one end to the fluid pressure on said inlet side and at the opposite end to the fluid pressure on said outlet side while communication between said inlet side and outlet side is maintained through said annular clearance, and said annular clearance defining a large effective orifice of predetermined size substantially larger than said small orifice but smaller than the opening through said tube whereby said valve means is normally held in said open position to effect flow control by said large orifice and is moved to its orifice effecting position to effect flow control by said small orifice at a predetermined pressure differential where the force of the fluid pressure on said inlet side acting on said one end of said rod exceeds the force of said spring and that of the fluid pressure on said outlet side acting in the opposite direction on said opposite end of the rod.

4,375,229

METHOD AND APPARATUS OF AUTOMATICALLY POSITIONING WIRE ENDS FOR MULTI-MODE END PROCESSING

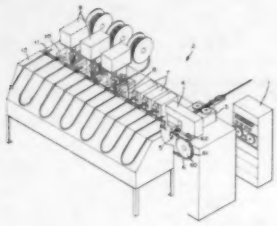
Hitoshi Mikami, Susono; Toshimasa Saito, and Hiroshi Ichikawa, both of Shizuoka, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 140,017

Claims priority, application Japan, Apr. 28, 1979, 54-052050; Apr. 28, 1979, 54-052051; Apr. 28, 1979, 54-052052; Apr. 28, 1979, 54-052053; Apr. 28, 1979, 54-052054; Apr. 28, 1979, 54-052055; Apr. 28, 1979, 54-056570[U]; Apr. 28, 1979, 54-056572[U]

Int. Cl.³ H01R *43/00*

U.S. Cl. 140—102 38 Claims



1. A method of automatically positioning opposite ends of a wire cut off from a wire source for multi-mode wire-end processings, which comprises the steps of

(a) clamping a leading end portion of a wire extending in a predetermined direction and having a leading end thereof resting at a predetermined position wherein said wire is clamped at a distance spaced from said leading end;

(b) pulling the clamped end portion substantially in a semicircle with a predetermined radius while turning the same clamped end portion by 180 degrees about a fixed center such that said leading end reaches a position symmetrical to the predetermined position relative to the center of said semicircle and the wire is placed in a hair-pin configuration;

(c) paying out said wire by a predetermined distance to follows the pulling movement;

(d) gripping the wire at two intermediate portions near to and spaced from the leading end and the predetermined position;

(e) cutting the wire at said predetermined position to form a trailing end of a cut-off wire; and

(f) releasing said clamping of the wire.

6. An apparatus for automatically positioning opposite ends of a wire cut off from a wire source for multi-mode wire-end processings which comprises

(a) means for repeatedly paying out a wire from wire source by a predetermined distance, said wire having a leading end;

(b) a wire reversing body provided above said paid-out wire and adapted for 180 degree stepwise rotations in a horizontal plane, said wire reversing body having wire clamping means for clamping a leading end portion of the paid-out wire at a distance spaced from said leading end and having a centerline perpendicularly crossing an axis of paid-out wire, said stepwise rotations of the reversing body and the paying out operations being adapted to take place alternately to place the wire in a hair-pin configuration;

(c) wire gripping means for gripping the paid-out wire at two intermediate portions near to and spaced from said leading end thereof and the crossing point of the centerline and the wire axis; and

(d) wire cutting means for cutting the paid-out wire at said crossing point to form a trailing end, of a wire cut-off from the paid-out wire, said clamping means being adapted to release the clamping of the wire after the cutting operation of the wire cutting means.

4,375,230

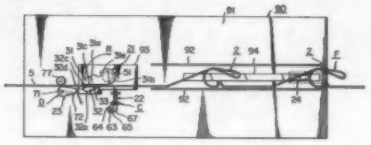
APPARATUS FOR FORMING A BAR POSITIONING MEMBER

Tsutomu Uehara, 1559-2 Oaza Asano, Kagawa-cho, Kagawa-gun, Kagawa-ken, 7611-11, Japan

Division of Ser. No. 954,506, Oct. 25, 1978, Pat. No. 4,318,262. This application Jun. 12, 1981, Ser. No. 273,279

Int. Cl.³ B21F *27/10, 1/04*

U.S. Cl. 140—102 10 Claims



8. In an apparatus for making a bar positioning member from a continuous elongate metal wire or the like, said bar-positioning member having at least one indentation, the improvement comprising:

means defining a path along which said wire is disposed, the path having upstream and downstream portions;

an elongate pendulumlike mold member located along said path, said mold member having a base end containing an axis about which said mold member is pivotable with respect to said path and between first and second positions, said mold member having grip means fixed on its other end remote from said axis and lying on said path upstream of said axis in said first position of said mold member for receiving and gripping an intermediate portion of said wire, said base end of said mold member having a wire engageable perimeter partially surrounding said pivot axis and shaped in the desired shape of said indentation to be produced in said wire;

means for rotating said mold member about said pivot axis from the first position to said second position wherein said grip means is downstream of said axis in said second position

whereby to form said wire into a substantial S-shape with one portion bent around said gripping means and the other reversely bent around said base end perimeter to form said indentation of the bar positioning member to be produced.

4,375,231

TIRE REPAIR CONSTRUCTION AND METHOD

Leslie Bubik, Toronto, and Stanley D'Souza, Richmond Hill, both of Canada, assignors to Vulcan Equipment Company, Ltd., Ontario, Canada

Filed Mar. 2, 1981, Ser. No. 239,333

Int. Cl.³ B60C *21/06;* B29H *5/16*

U.S. Cl. 152—370 12 Claims

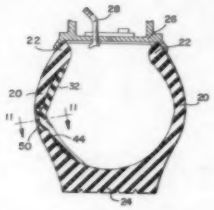
1. A reconditioned radial tire having a plurality of radially oriented casing cords and including at least one sidewall injury area in which one or more of said cords have been severed, said injury area being repaired by a composite construction comprising a patch applied on the inner surface of said sidewall and a plug material filling the remainder of said injury area on the outside of said patch; said patch having a plurality of reinforcing cords oriented radially of the tire and generally parallel to said tire cords; and a portion of said patch including at least some of said reinforcing cords extending outwardly beyond the plane of said sidewall inner surface into the injury area of said sidewall and having a generally concave orientation within said injury area to impede deformation of said compos-

ite construction when said tire is inflated to normal operating pressure.

3. A method of repairing a damaged portion in the sidewall of a radial tire wherein the tire includes a plurality of casing cords disposed generally radially between the beads of the tire, and wherein the damaged portion includes one or more severed casing cords, comprising the steps of:

removing a section of said sidewall around said damaged portion including at least a part of the damaged casing cords to form a plug area;

installing a patch having a plurality of reinforcing cords embedded therein over said plug area on the inside of said tire, said patch being disposed such that its reinforcing cords are aligned generally parallel to said casing cords;



pressurizing the interior of the tire to at least about 60% of the tire's normal operating pressure and for a time sufficient to position the patch at least partially within the damaged portion defined by said plug area and between the inside and outside surfaces of said sidewall and to shape the patch to impede deformation of the patch when subjected to internal tire pressure subsequent to curing the repair;

applying a plug material to the remainder of the damaged portion defined by said plug area on the outside of the patch while maintaining the patch in said position and shape; and

curing the patch and plug material while maintaining the patch in said position and shape.

4,375,232

INSULATION OF SHED-LIKE BUILDINGS

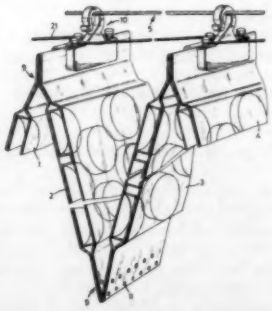
Felix Heescher, Beuergern, Fed. Rep. of Germany, and Claus J. Caroe, Snekkerstern, Denmark

Filed Oct. 29, 1980, Ser. No. 201,994

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943743; Mar. 6, 1980, 8006056

Int. Cl.³ A01G *9/14*

U.S. Cl. 160—84 R **7 Claims**



1. Insulation adapted for use in a greenhouse-type building, said building having a side, said insulation including:

a plurality of multiple layer burl foil strip sections disposed along said side of said building, each burl foil strip section having a top and a bottom and constructed to be folded at substantially equidistant intervals creating pleated regions in said section substantially normal to a first direction and to second reverse direction of section movement, each said pleated region including flange means for reinforcing said pleated section region, said flange means including welded cross piece members;

each said pleated region formed by joining two adjacent burl foil strip sections at their respective said bottoms with one of said crossmembers, adjacent pleated regions being joined together at the respective said tops of said burl foil strip sections with one of said crossmembers;

drawing means attached to each of said sections adjacent said side of said building for moving said sections in a first direction and then in a reverse second direction along said side; and

attachment means for operatively securing said foil strip sections to said drawing means.

4,375,233

METHOD OF MAKING A TURBINE BLADE HAVING A METAL CORE AND A CERAMIC AIRFOIL

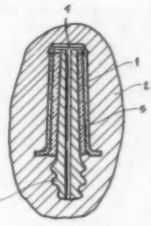
Axel Rossmann, Bachweg 4, and Werner Huther, Nikolaus-Lenau-Strasse 8, both of Karlsfeld, Fed. Rep. of Germany (8047)

Filed Oct. 21, 1980, Ser. No. 198,978

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945531

Int. Cl.³ B22D *19/02*

U.S. Cl. 164—9 **12 Claims**



1. A method of making a turbine blade having a metal core and a ceramic airfoil, comprising the steps of

(a) providing a finished ceramic airfoil having within it

I. a lining of thermal insulation material of high elasticity, and

II. a fusible core having the desired contour of the metal core,

(b) providing a casting mold around the ceramic airfoil,

(c) melting and removing the fusible core from the ceramic airfoil to leave a cavity within the airfoil surrounded by the insulation lining,

(d) filling the cavity with a molten metal, and

(e) allowing the molten metal to solidify to form the metal core of the turbine blade.

4,375,234

ELECTROMAGNETIC THIN STRIP CASTING PROCESS

Michael J. Pryor, Woodbridge, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 139,617, Apr. 11, 1980, Pat. No. 4,353,408. This application Oct. 5, 1981, Ser. No. 308,217

Int. Cl.³ B22D *27/02*

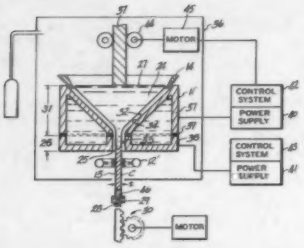
U.S. Cl. 164—452 **11 Claims**

1. In a process for casting a material into a desired thin strip shape, said process comprising:

electromagnetically containing and forming said material in molten form into a desired shape; the improvement wherein:

said electromagnetic forming and containing step includes:

shaping electromagnetically a first portion of said molten material into said desired thin strip shape and shaping and



containing solely by an electromagnetic field a second portion of said molten material to provide a sump of said molten material upstream of and communicating with said first portion, said sump of molten material having at a top surface thereof a cross-sectional area at least five times greater than a cross-sectional area of said thin strip shape.

4,375,235

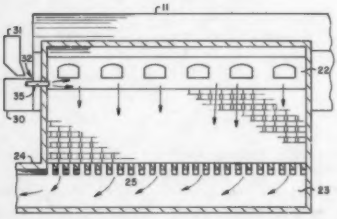
REGENERATOR FLOW DISTRIBUTION BY MEANS OF A BURNER

Yih W. Tsai, O'Hara Township, Allegheny County, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 24, 1981, Ser. No. 305,241

Int. Cl.³ F28D *17/04*

U.S. Cl. 165—1 **14 Claims**



1. A method of operating a regenerator of the type which includes a gas pervious bed of refractory material, a gas distributing space communicating with the bed along its length at one side, a flue communicating with the gas distributing space at one end thereof, a plenum communicating with the bed along its length at the opposite side of the bed from the distributing space, a plurality of ports opening onto the plenum at spaced-apart locations along the length of the plenum and communicating with a combustion furnace; wherein the regenerator participates in a periodically reversing firing cycle including an exhaust phase in which hot exhaust gases pass from the furnace through the ports into the plenum and then through the bed to the distributing space and out of the regenerator through the flue, and a firing phase wherein incoming combustion air enters the regenerator through the flue and then passes from the distributing space through the bed to the plenum and then to the furnace by way of the ports; the improvement comprising: impeding the flow of exhaust gases along the plenum in the direction of the flue end of the regenerator during the exhaust phase by directing a stream of gases within the plenum in a countercurrent direction, thereby maintaining a more uniform distribution of exhaust gas flow through the bed.

4,375,236

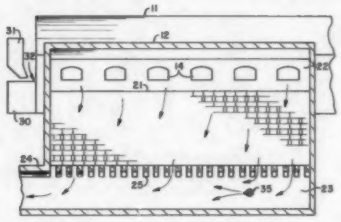
REGENERATOR FLOW DISTRIBUTION BY MEANS OF AIR JETS

Yih W. Tsai, O'Hara Township, Allegheny County, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 24, 1981, Ser. No. 305,242

Int. Cl.³ F28D *17/04*

U.S. Cl. 165—1 **14 Claims**



1. A method of operating a regenerator of the type which includes a gas pervious bed of refractory material, a gas distributing space communicating with the bed along its length at one side, a flue communicating with the gas distributing space at one end thereof, a plenum communicating with the bed along its length at the opposite side of the bed from the distributing space, a plurality of ports opening onto the plenum at spaced apart locations along the length of the plenum and communicating with a combustion furnace, wherein the regenerator participates in a periodically reversing firing cycle including an exhaust phase in which hot exhaust gases pass from the furnace through the ports into the plenum and then through the bed to the distributing space and out of the regenerator through the flue, and a firing phase wherein incoming combustion air enters the regenerator through the flue and then passes from the distributing space through the bed to the plenum and then to the furnace by way of the ports; the improvement comprising directing a gaseous jet along the distributing space in the direction of the flue end of the distributing space to maintain a more uniform distribution of flows through the bed.

4,375,237

WELL EQUIPMENT SETTING OR RETRIEVAL TOOL

Ronald K. Churchman, Plano, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Feb. 21, 1978, Ser. No. 879,968

Int. Cl.³ E21B *23/03*

U.S. Cl. 166—117.5 **17 Claims**

1. A tool for setting or retrieving well equipment in a well comprising:

elongate body means;

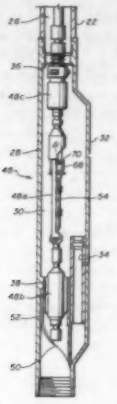
arm means carried by said body means and movable between a first, running position and a second position for setting or retrieving equipment;

means for moving said arm means from said first position to said second position and including:

means extending beyond the exterior of said body for engaging an activating shoulder in the well upon movement of said body means in one direction, and

hydraulic means, operable upon continued movement of

said body means in said one direction once said engaging means has engaged an activating shoulder, for applying a force for actuating movement of said arm means from said first to said second position.



4,375,238

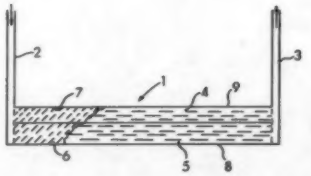
METHOD FOR RECOVERY OF OIL FROM RESERVOIRS OF NON-UNIFORM PERMEABILITY

Robert W. Parsons, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jan. 5, 1981, Ser. No. 222,345

Int. Cl.³ E21B *47/00, 43/22*

U.S. Cl. 166—252 **8 Claims**



1. In a miscible drive fluid process for the recovery of oil of the type wherein miscible fluid consisting essentially of a single oil-miscible fluid is introduced into an oil reservoir and displaces the reservoir oil contained therein to a point where it is removed through a production well to the earth's surface, wherein, when said reservoir includes at least two adjacent oil-containing strata of differing permeabilities, the improvement which comprises:

determining the vertical location of each said stratum of differing permeability relative to one another;

determining the density of the oil in the reservoir and the temperature of the reservoir; and then

injecting miscible drive fluid into said reservoir while maintaining the reservoir at such pressure, relative to the temperature and other conditions of the reservoir such that the miscible fluid has a density substantially different from the density of the oil in the reservoir so that the miscible fluid tends to gravitate to the level of the less permeable stratum, to displace oil from that stratum and from the more permeable stratum at substantially the same rate.

4,375,239

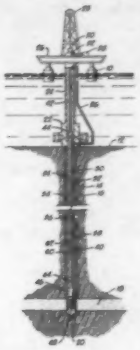
ACOUSTIC SUBSEA TEST TREE AND METHOD

Burchus Q. Barrington, and George J. Nix, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 13, 1980, Ser. No. 159,307

Int. Cl.³ E21B *34/10, 34/16, 43/12, 17/04*

U.S. Cl. 166—336 **41 Claims**



23. A well string, comprising:

a pipe string including a plurality of connected pipe segments with acoustic couplers connected between adjacent pipe segments, said acoustic couplers being separate from any mechanical connecting means connecting said adjacent pipe segments;

transmitting means, connected to an upper portion of said pipe string, for transmitting an acoustic command signal down said pipe string through said acoustic couplers;

a subsurface device to be actuated by said acoustic command signal transmitted down said pipe string through said acoustic couplers;

signal receiving means connected to said pipe string for receiving said acoustic command signal transmitted down said pipe string through said acoustic couplers; and

actuator means, operably associated with said signal receiving means, for actuating said subsurface device in response to said acoustic command signal transmitted down said pipe string through said acoustic couplers.

37. A method of transmitting an acoustic signal through a pipe string, said method comprising the steps of:

assembling said pipe string from at least a first and a second pipe segment, said first segment being attached to said second segment;

connecting an acoustic coupling means between said first and second pipe segments, said acoustic coupling means being separate from any mechanical connecting means connecting said first and second pipe segments; and

transmitting said acoustic signal through said first pipe segment, then through said acoustic coupling means, and then through said second pipe segment.

4,375,240

WELL PACKER

John L. Baugh; Phillip H. Manderscheid, and James W. Montgomery, all of Houston, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Dec. 8, 1980, Ser. No. 213,926

Int. Cl.³ E21B *33/126*

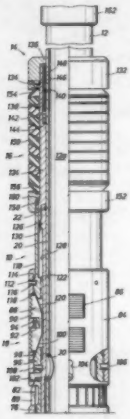
U.S. Cl. 166—387 **9 Claims**

9. A method of operating a packer in a well comprising the following steps:

a. positioning in a well packer with seal means operable at high temperatures;

b. communicating fluid pressure to the packer to:

i. propel such seal means of the packer into sealing engagement with the well;
ii. propel anchoring means of the packer into anchoring engagement with the well; and
iii. lock the seal means and anchoring means in such engagement with the well;
c. selectively longitudinally moving a central mandrel of the packer, connected to an operating string within the well, relative to the anchoring means of the packer without disturbing the sealing engagement between the packer and



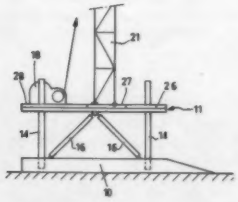
the well, and while maintaining sealing engagement between the packer and the central mandrel;
d. raising the central mandrel of the packer to longitudinally move a stop from registration with latch dogs within the packer to release the seal means and the anchoring means for movement out of their respective engagements with the well; and
e. further raising the central mandrel to so move the seal means out of sealing engagement with the well and to move the anchoring means out of anchoring engagement with the well.

4,375,241

DRILLING INSTALLATION, MORE SPECIFICALLY FOR OIL-DRILLING OPERATIONS

Jean Gallon, Paris, France, assignor to Union Industrielle et D'Entreprise, Paris, France

Filed May 29, 1979, Ser. No. 42,939
Claims priority, application France, Apr. 11, 1979, 7909155
Int. Cl.³ B23Q *5/027, 5/033*
U.S. Cl. 173—151 **3 Claims**



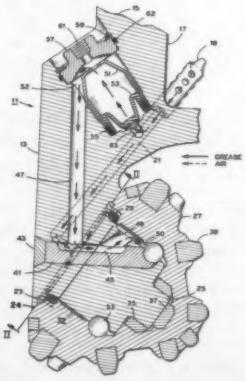
1. A drilling installation comprising a stationary base resting on the ground, a platform vertically movable between a lowermost position wherein it rests on top of said base and an uppermost position wherein it is vertically spaced from said base top, means for raising and lowering said platform with respect to said base, a mast-like drilling rig having a top end and a bottom end, said rig being pivotally mounted at said bottom end on said movable platform for movement between a horizontal resting position and a vertical position wherein it is supported by said platform, a plurality of vertical uprights affixed at their respective lower ends to said base for guiding said platform when it effects its vertical movements between said lowermost and uppermost positions, said platform comprising a unitary rigid supporting structure substantially formed from girders installed when said platform is in said lowermost position, a plurality of coffers adapted to be assembled on said supporting structure in said lowermost position, so as to define a working floor on said platform, one of said coffers comprising a rotary drilling table and another one of said coffers constituting a storage unit for storing drilling equipment items including drill-pipes, an erecting derrick removably mounted on said movable platform, a drilling winch mounted on said movable platform, a reeving block, a rig raising cable connected at one of its ends to said rig and operatively guided by said erecting derrick, the other end of said rig raising cable being removably connected to said reeving block, a winch cable connected to said winch, said reeving block being operatively connected to said drilling winch by said winch cable guided by a guiding pulley at the top end of said mast-like rig and adapted to be actuated by said winch for raising said rig to said vertical position on said movable platform while the same is in said lowermost position by exerting, through said reeving block, a tractional force on said other end of said rig raising cable, thereby moving the rig about the pivotal mounting thereof on said platform.

4,375,242

SEALED AND LUBRICATED ROCK BIT WITH AIR PROTECTED SEAL RING

Edward M. Galle, Friendswood, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Aug. 11, 1980, Ser. No. 177,292
Int. Cl.³ E21B *10/18*
U.S. Cl. 175—228 **2 Claims**



1. In an earth boring drill bit having a body with a hollow interior and a nozzle passage to direct air or gas against the bottom of the borehole, at least one leg with a depending shaft to support a bearing means, a rotatable cutter on the bearing means, and an annular seal between the cutter and shaft, the improvement which comprises:
lubrication means including a lubricant passage in the shaft to provide liquid lubricant to the bearing means interior of the annular seal;
a pressure system including a movable element in a chamber

to urge liquid lubricant to the bearing means on the interior of the annular seal during drilling;

a pressurized passage extending between the chamber and the gas passage to bias the movable element to provide positive lubricant pressure in the bearing means;

an annular groove formed in a radial surface at the end of the shaft adjacent to and exterior of the annular seal with at least one exit port;

an air or gas passage extending from the annular groove to the interior of the bit to provide the flow of cooling gas to cool the region around the seal and to protect the seal from abrasive materials to lengthen its life and maintain lubrication of the bearing means;

said exit port and said air or gas passage intersecting the annular groove to create substantially even flow across the length of the groove to evenly cool the adjacent annular seal.

4,375,243

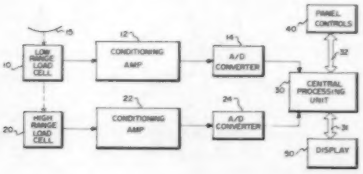
WIDE RANGE HIGH ACCURACY WEIGHING AND COUNTING SCALE

W. Gary Doll, 384 Keenan Ave., Fort Myers, Fla. 33907

Filed Mar. 30, 1981, Ser. No. 249,081

Int. Cl.³ G01G *19/04*

U.S. Cl. 177—25 **14 Claims**



1. A wide range weighing and counting scale comprising:

(a) a first load cell having a first range of operation, and a second load cell having a range of operation higher than said first load cell, said second load cell mechanically coupled in tandem with said first low range cell;

(b) first conditioning amplifier means connected to said first load cell to receive electrical signals therefrom for producing a digital count proportional to the load applied to said first load cell, said amplifier having a preselected upper count limit;

(c) second conditioning amplifier means connected to said second load cell to receive electrical signals therefrom for producing a digital count proportional to the load on said second load cell; and

(d) computer means connected to said first and second conditioning amplifiers, said computer means for selecting the digital count for processing from said first conditioning amplifier when said count is less than a preselected upper limit, and for selecting the digital count from said second conditioning amplifier when said first count is greater than said selected upper limit, said computer means for calculating a number representative of the load on said scale from the selected digital count; and

(e) display means for displaying said calculated number.

4,375,244

HAULING VEHICLE FOR LARGE AIRCRAFT

Andre M. R. Morin, Chatillon sur Thouet, France, assignor to SOVAM, Parthenay, France

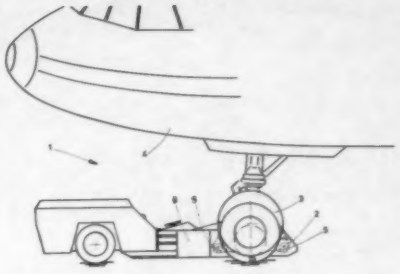
Filed Apr. 17, 1980, Ser. No. 141,202

Claims priority, application France, Apr. 18, 1979, 79 09807

Int. Cl.³ B60P *3/06*

U.S. Cl. 180—14 C **6 Claims**

1. A hauling vehicle especially for hauling big aircraft, comprising a framework provided with a recess extending inwardly from one end and having parallel side walls, said side walls having longitudinally extending guideways therein, a pair of longitudinally spaced slides disposed in each guideway at the outer end and the inner end thereof respectively, inner and outer elongated horizontal support members provided with axles mounted in said slides, an upper shoe and a lower shoe pivotally connected at their ends with each support member on parallel axes parallel to the support member, the shoes and support member at the outer end of said recess being swingable away from the recess temporarily to open its outer end for entrance of aircraft wheels, and means operative after said last-mentioned shoes are swung back to close the recess for moving the slides in each guideway toward each other to engage all of said shoes with aircraft wheels in said recess.



4,375,245

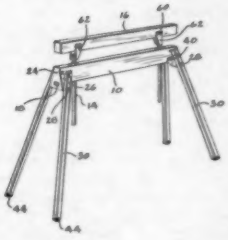
SAWHORSE BRACKETS

John M. Schill, 208 Samuel St., Kitchener, Ontario, Canada (N2H 1R6)

Filed Jan. 9, 1981, Ser. No. 223,879

Int. Cl.³ B27B *21/00*; F16M *11/00*

U.S. Cl. 182—155 **10 Claims**



1. A sawhorse bracket for use with an elongated cross-bar of rectangular cross-section comprising:

a central end portion of truncated isosceles triangle shape to have corresponding opposite inclined edges;

two inclined leg-supporting portions each connected to a respective inclined edge so as to extend longitudinally of the cross-bar;

two return portions each connected to a respective leg-supporting portion so as to extend back toward the respective adjacent surface of the cross-bar when present;

two end portions each connected to a respective return portion and adapted for fastening to the cross-bar when present;

whereby each leg-supporting portion, return portion and the interposed parts of the end portion and the cross-bar when present form a hollow structural leg-support member; and

two leg members each pivotally connected to a respective leg-supporting portion for movement between a splayed

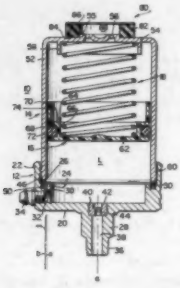
operative supporting position and a stored position in which it will extend alongside the cross-bar when present.

4,375,246

GREASE LUBRICATING ASSEMBLY

Helmut G. Tietje, Woodcliff Lake, N.J., assignor to TM Industries, Inc., Westwood, N.J.

Filed Dec. 12, 1979, Ser. No. 102,923
Int. Cl.³ F16N 11/04
U.S. Cl. 184—45 R 13 Claims



1. A grease lubricating assembly for supplying a substantially constant flow of lubricant to an apparatus to be lubricated which comprises:

a housing member formed by a base portion including an orifice, an upper side wall portion extending upwardly from said base portion and a lower wall portion defining a lubricant passageway extending downwardly from said base portion, said base portion being formed with a substantially flat top wall, said orifice being in lubricant communication with said lubricant passageway of said lower wall portion and of a larger cross-sectional area than said lubricant passageway, said orifice being formed for recieving a changeable fitting, said flat top wall of said base portion of said housing member being formed with an upwardly-extending inner section forming a channel with said upper side wall portion, said upper side wall portion having a threaded inner surface;

a fitting having a lubricating channel disposed in said orifice of said housing member;

a lubricant container comprised of an end wall and side wall positioned within and mounted to said housing member, said side wall of said lubricant container formed with a tapered inner surface of decreasing diameter from bottom to top and at an angle of from 0.1 to 2.5 degrees throughout the side wall length with respect to the axis of said housing member, said lubricant container having at least one orifice about said end wall, said side wall being provided with threaded means for mounting within said housing member;

a sealing ring compressively disposed in said channel of said housing member between said base portion and a terminal portion of said side wall of said lubricant container;

a piston including peripheral seal means wholly positioned in said housing member and disposed in a manner whereby said peripheral seal means contacts said tapered inner surface of said side wall of said lubricant container, said peripheral seal means of said lubricant container being formed of an elastomeric material for contacting said tapered inner surface of said side wall of said lubricant container with increasing contact area therebetween with concommital increase in frictional resistance as said pistron is inserted into said lubricant container, said piston being formed with a substantially flat bottom wall which cooperates with the said flat top wall of said base portion of said housing member thereby minimizing the amount of lubricant remaining in said grease lubricating assembly upon completion of travel of said piston within said lubricant container, said piston traveling a distance greater than 50 percent of the overall height of said grease lubricating assembly; and

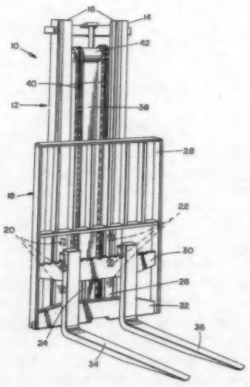
a coil spring disposed within said lubricant container between said end wall thereof and said piston, said coil spring having decreasing compressional force compensated by a decrease in said frictional resistance between said seal means and said tapered inner surface of said side wall of said lubricant container to permit substantially constant flow of lubricant.

4,375,247

ROLLER SUSPENSION

Robert T. McNeely, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01071, § 371 Date Aug. 18, 1980, § 102(e) Date Aug. 18, 1980, PCT Pub. No. WO82/00692, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 18, 1980, Ser. No. 250,744
Int. Cl.³ B66B 9/20
U.S. Cl. 187—9 R 13 Claims



6. A roller mounting structure (52) comprising:

a right cylindrical axle shaft (76);

a bearing assembly (82) being positioned about said axle shaft (76) and adapted for mounting a roller (22);

a crowned spring (94) with an annular concave surface 96 being positioned between said bearing assembly (82) and said axle shaft (76) such that said concave surface (96) is positioned adjacent said axle shaft (76) and

a snubber spring ring (106) positioned adjacent the crown (105) of the concave surface (96) of said crowned spring (94) in the space between the concave surface (96) and the axle shaft (76).

4,375,248

LIFTING APPARATUS

Mitsuhiro Kishi, 1320 Mizuhonocho, Ashikaga-shi, Tochigi-Pref., 326-03, Japan

Filed Dec. 31, 1980, Ser. No. 221,952
Claims priority, application Japan, Jan. 17, 1980, 55-3924
Int. Cl.³ B66B 11/04
U.S. Cl. 187—18 7 Claims

1. A lifting apparatus comprising

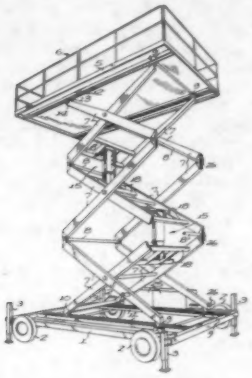
a support,

a work platform, and

a pantographic lifting mechanism

operatively coupled between said support and said work platform for elevating said work platform away from said support,

said pantographic lifting mechanism including a plurality of pivotally connected X-link units, each of said X-link units having a pair of transversely spaced sets of two link levers pivotally connected at adjacent mid-portions of the link levers as a scissors linkage, the pivotal connection of said X-link units being at adjacent end portions of said link levers and actuating means operatively connected between adjacent pivotally connected ones of said link levers and actuatable for stretching said pantographic lifting mechanism, said actuating means including a floating hydraulic cylinder free from affixation to



said pivotally coupled X-link units, a pair of guiding members rotatably mounted on each opposite end of said floating hydraulic cylinder, and a respective flexible connecting member having opposite ends fixed respectively to said adjacent pivotally coupled link levers and trained around said guiding members, whereby when said hydraulic cylinder is extended, said guiding members will be displaced away from each other to cause said opposite ends of said flexible connecting member to move away from each other for thereby forcing said adjacent pivotally coupled link levers to diverge away from each other.

4,375,249

FLOOR SELECTOR SYSTEM FOR ELEVATOR SYSTEM

Ryuichi Kajiyama, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,336

Claims priority, application Japan, Oct. 24, 1979, 54-137445

Int. Cl.³ B66B *3/02*

U.S. Cl. 187—29 R **2 Claims**

1. A floor selector for an elevator system having an elevator car traveling within a hoistway extending through a plurality of floors disposed at predetermined equal intervals one above another, comprising: means including an electronic computer for sensing successively synchronized floors displayed in synchronization with the travel of said elevator and advanced floors in advance of associated synchronized floors and for delivering signals for said synchronized and advanced floors wherein there are provided a first and a second switch actuator disposed between each pair of adjacent floors within said hoistway; first calculation means responsive to the passage of said elevator car through said first switch actuator so as to calculate the synchronized floor by effecting the addition or subtraction of one floor by means of said electronic computer, and second calculation means responsive to one of either the start of said elevator car or to the passage of said elevator car through said second switch actuator so as to calculate said advanced floor by adding or subtracting a predetermined number of floors to or from said synchronized floors by means of said electronic computer.

4,375,250

SPOT-TYPE DISC BRAKE

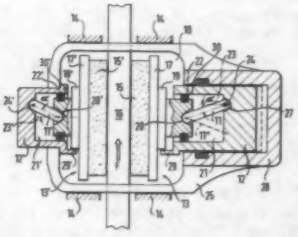
Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 30, 1981, Ser. No. 249,257

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014648

Int. Cl.³ F16D *55/46*

U.S. Cl. 188—72.2 **15 Claims**



1. A spot-type disc brake comprising:

at least one brake-shoe-actuating member axially slidably disposed in a brake caliper and adapted to be acted upon by a brake force;

a supporting surface disposed in said actuating member to receive a circumferential force acting upon a first brake shoe actuated by said actuating member when said first brake shoe engages an adjacent surface of a brake disc during a braking operation, said first brake shoe being spaced a given distance from said support surface in a brake release position; and

an expanding device disposed between said first brake shoe and said actuating member which upon movement of said expanding device towards said supporting surface urges said actuating member a predetermined amount away from said first brake shoe.

4,375,251

AUTOMATIC WEAR ADJUSTER FOR DRUM BRAKES

John P. Burke, Leamington Spa, and Alastair J. Young, Kenilworth, both of England, assignors to Automotive Products Limited, Leamington Spa, England

Filed Aug. 28, 1980, Ser. No. 182,042

Claims priority, application United Kingdom, Aug. 31, 1979, 7930314

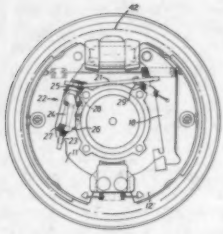
Int. Cl.³ F16D *65/56*

U.S. Cl. 188—79.5 P **7 Claims**

1. In a drum brake:

a brake drum;

a pair of brake shoes each having a wearable friction lining;
a fixed abutment between two adjacent ends of the brake shoes;
actuating means between the other adjacent ends of the brake shoes for urging said shoes against the drum;
a handbrake lever pivoted to one brake shoe adjacent the actuating means;
a strut between the handbrake lever and the other brake shoe for urging the brake shoes against the drum on actuation of said handbrake lever; and



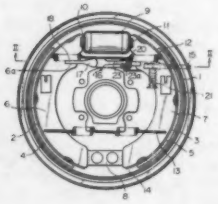
self adjusting means for increasing the effective length of the strut on wear of the friction linings; said adjusting means comprising a pair of screw-threaded members and step by step means for relative rotation thereof on operation of said actuation means, said screw-threaded members being arranged substantially at right angles to the strut and one of the members having spacer means dirrectly interposed between the strut and one of the handbrake lever and other brake shoe, the position of the spacer means being variable by relative rotation of the screw-threaded members to change the spacing effect of the spacer means and thus the effective length of the strut.

4,375,252

SHOE DRUM BRAKE

Masami Aono, Yokohama, and Shinichi Izumi, Tokyo, both of Japan, assignors to Tokico, Ltd., Kanagawa, Japan

Continuation of Ser. No. 91,494, Nov. 5, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,313
Claims priority, application Japan, Nov. 7, 1978, 53/136909
Int. Cl.³ F16D *51/12, 65/56*
U.S. Cl. 188—79.5 P **7 Claims**



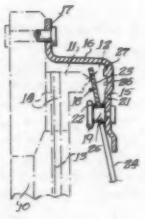
1. A shoe drum brake engagable with a rotating drum comprising:
a backing plate;
a pair of arcuate shoes movable toward and away from a drum and from each other, each having a web thereon parallel to said backing plate and spaced from the other, the web of one of said pair of arcuate shoes having aperture therein;
a strut assembly having two ends, including a first strut having a cylindrical portion with one end open, a second strut having an external screw thread portion on one end telescopically received in said cylindrical portion of said first strut, and an adjusting nut threadingly engaging said screw thread portion of said second strut and abutting said open end of said cylindrical portion of said first strut so as to determine the overall length of said strut assembly, one of said two ends of said strut assembly being connected to the web of the other of said pair of arcuate shoes;
a hand brake lever with one end passing through said aperture in said web of said one of said pair of arcuate shoes;
a supporting shaft normally resting on said backing plate and pivotally mounting said brake lever thereto, said supporting shaft being connected to the other of said two ends of said strut assembly;
means for rotating said adjusting nut in association with the pivotal movement of said hand brake lever; and
a spring having clamping portions resiliently engaging opposite sides of said web of said one of said pair of arcuate shoes and a portion connecting said clamping portions and extending through said aperture, said spring further having an extending portion resiliently biasing said supporting shaft against said backing plate.

4,375,253

DEFLECTION LIMITING STOP FOR A DIAPHRAGM SPRING CLUTCH

Philip J. Mott, Harwood Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 24, 1980, Ser. No. 190,131
Int. Cl.³ F16D *13/44, 13/71*
U.S. Cl. 192—89 B **4 Claims**



1. In a vehicle clutch assembly including a flywheel, a clutch cover secured to the flywheel, a pressure plate operatively connected with said clutch cover and having a fulcrum surface formed adjacent its outer periphery, a clutch plate positioned between and adapted to be squeezed by the flywheel and pressure plate, and a diaphragm spring pivotally mounted intermediate its inner and outer edges in said clutch cover and engaging said fulcrum surface on said pressure plate radially outwardly of said clutch cover pivotal mounting, the outer edge of said spring having freedom of movement within said clutch cover, the improvement comprising at least one deflection limiting stop secured in said clutch cover to be engaged by said outer spring edge and limit pivotal movement of said diaphragm spring.

4,375,254

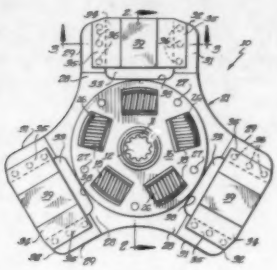
CLUTCH DRIVEN PLATE ASSEMBLY WITH CUSHIONED FRICTION MATERIAL

Thaddeus Lech, Jr., Sterling Heights, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 17, 1980, Ser. No. 207,833
Int. Cl.³ F16D *13/69*
U.S. Cl. 192—107 C **7 Claims**

1. A clutch driven plate comprising a generally circular plate having a plurality of circumferentially equally spaced radially extending lobes on the periphery thereof, a pair of oppositely disposed generally rectangular support plates extending transversely across each lobe with the opposite ends secured to said lobe on the opposite surfaces thereof, each

support plate having a friction pad secured thereto, and cushioning means between said friction pads comprising a spacing between the support plates and the lobe so that the resiliency of



the support plates provides a spring force resisting the clutch engaging force resulting in an elastic progression interacting with the engagement force.

4,375,255

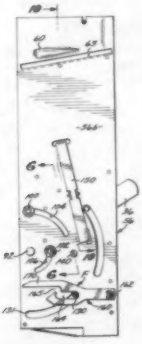
COIN HANDLING APPARATUS FOR A VENDING MACHINE

Glenn M. Roberts, 4169 Avenida Madrid, Cypress, Calif. 90630

Filed Apr. 6, 1981, Ser. No. 251,149

Int. Cl.³ G07F *5/04*

U.S. Cl. 194—1 G **13 Claims**



1. In a coin-operated vending machine, coin-handling apparatus adjustable to receive single or multiple coins, said coin handling apparatus comprising:

a support attached to said vending machine;

a coin feed chute on said support;

a plate member rotatably carried by said support in communication with said coin feed chute;

a coin discharge chute on said support below said coin feed chute and in communication with said plate member;

a coin passage extending through said plate member to receive one or more coins, one end of said passage facing said coin feed chute when said plate member is in an initial coin loading position;

a coin receiving pocket formed in said plate member intermediately of said coin passage and isolated therefrom, said pocket having a radially outwardly facing opening to receive a coin from said coin feed chute when said plate member is in its coin-loading position;

adjustment means on said support that extend into said coin passage at selective positions so as to limit the number of coins which may be received within said coin passage when said plate member is in its coin-loading position; and

means attached to said plate member for rotating said plate member from its coin loading position to a coin unloading position wherein the other end of said coin passage and the opening of said pocket are exposed to said coin discharge chute, and with said rotation moving any coins disposed within said coin passage out of contact with said adjustment means whereby any coins disposed in said coin chute and the coin disposed within said pocket automatically fall into said coin discharge chute.

4,375,256

MACHINE FOR SORTING WORKPIECES BELONGING TO DIFFERENT CLASSIFICATION CLASSES

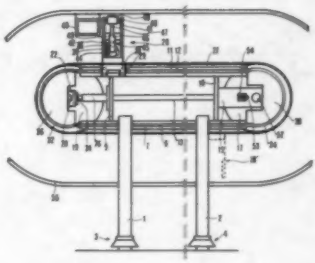
Narciso Selleri, Monteveglio, Italy, assignor to Finike Italiana Marposs, S.p.A., S. Marino di Bentivoglio, Italy

Continuation of Ser. No. 26,751, Apr. 3, 1979, abandoned. This application Jul. 29, 1981, Ser. No. 288,046

Claims priority, application Italy, Apr. 17, 1978, 3393 A/78

Int. Cl.³ B65G *37/00, 47/10*

U.S. Cl. 198—360 **9 Claims**



1. A machine for sorting pieces belonging to different classification classes, comprising:

a frame;

a conveyor supported by the frame, the conveyor including supporting and driving means and a slide fixedly coupled to the supporting and driving means, the supporting and driving means being displaceable for driving the slide along a path including an upper horizontal portion from a loading portion to selectable unloading positions, the slide including a chute having an open input and an output front opening aligned with each other and forming a support for gravitationally sliding the pieces from the open input to the output front opening, and movable stop means for closing said output front opening to stop the piece located in the chute;

a loading chute for receiving in succession the pieces to be sorted for gravitationally sliding the same onto the slide chute, the loading chute being arranged above the supporting and driving means and ending at a height adapted to substantially correspond with the open input of the slide chute;

a plurality of unloading chutes, each corresponding to a relevant classification class of the pieces, the unloading chutes being arranged laterally with respect to said supporting and driving means, at a side opposite the loading chute, the unloading chutes having sliding surfaces for gravitationally sliding the pieces, the sliding surfaces being arranged to receive pieces sliding out of the slide chute and to permit unloading of the same; and

control means for controlling the supporting and driving means, the control means including a motor for actuating the supporting and driving means; a unit for receiving signals responsive to the classification class of the piece to

be sorted; a control group connected to said unit and to the motor, the control group being adapted to control the motor for starting the supporting and driving means from the loading position of the slide chute, for subsequently stopping the supporting and driving means to locate the slide chute at the unloading chute corresponding to the classification class of the piece to be sorted and for thereafter starting again the supporting and driving means for displacing the slide to the loading position, and wherein said movable stop means are adapted to open said front opening after stopping of the slide chute at said unloading chute, for permitting the piece to slide down from the slide chute to the relevant unloading chute.

4,375,257

HYDROGEN STORAGE AND SUPPLY DEVICE

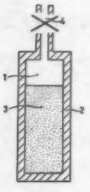
Hugo A. C. M. Bruning; Johannes H. N. van Vucht; Frans F. Westendorp, and Hinne Zijlstra, all of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 895,000, Apr. 10, 1978, Pat. No. 4,242,315, which is a continuation of Ser. No. 673,220, Apr. 2, 1976, abandoned, which is a continuation of Ser. No. 247,454, Apr. 25, 1972, abandoned, which is a continuation of Ser. No. 867,811, Oct. 20, 1969, abandoned. This application Aug. 1, 1980, Ser. No. 174,465

Claims priority, application Netherlands, Jan. 24, 1969, 6901276; Apr. 23, 1969, 6906305

Int. Cl.[3] **F17C** *11/00;* **F16L** *55/04;* **B65D** *25/00;* **C01B** *1/26*

U.S. Cl. 206—0.7 **3 Claims**



1. A hydrogen storage and supply device comprising a pressure vessel having an obturable opening extending from inside said vessel to the atmosphere and, contained in said vessel, a hydride of the gross formula AB_nH_m and capable of reversible dissociation into metal plus hydrogen gas, wherein A is an element selected from the group consisting of calcium, the rare earths, and combinations of one of said elements with one of Th, Zr, and Hf, B is an element selected from the group consisting of Ni and Co, and combinations of said element with one of the elements Fe and Cu, n has a value and lying between about 3 and about 8.5 and m has a value exceeding 0 and up to about 7.

4,375,258

REUSABLE ENCLOSED CARRIER CARTON

Jerry W. Crayne; Natalie A. Wolff, and David L. Botterman, all of Arlington, Tex., assignors to Container Corporation of America, Chicago, Ill.

Filed Apr. 13, 1981, Ser. No. 253,096

Int. Cl.[3] **B65D** *5/54*

U.S. Cl. 206—141 **5 Claims**

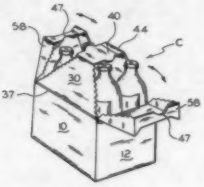
1. A fully enclosed article carrier carton, formed of a unitary blank of foldable paperboard, and having removable portions to provide access to the contents of the carton without destroying the integrity of the carton for reuse with empty bottles, said carton comprising:

(a) opposed pairs of side and end wall panels foldably joined to each other to form a tubular structure open at the top and bottom;

(b) said side and end wall panels having upper side wall and end wall sections foldably joined to their related side and end wall panels;

(c) bottom closure flaps foldably joined to lower edges of said side wall panels and secured to each other in at least partially overlapped relation to close the bottom of said structure;

(d) top closure flap foldably joined to upper edges of said upper side wall sections and secured to each other in at least partially overlapped relation to close the top of said structure; and



(e) portions of said upper side wall sections, said upper end wall sections and portions of said top closure flaps forming opposed detachable end portions which are joined to the remaining portions thereof by weakened lines of tear which permit said end portions to be detached from said remaining portions to provide access to the contents of the carton without destroying the integrity of the center so that it can have limited reuse.

4,375,259

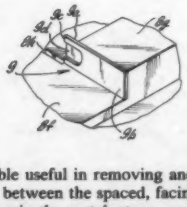
TOOL KIT FOR WATCH STRAP REPLACEMENT

William Mancini, Prospect; Carl Weiss, Oakville, and Theodore Grohoski, Woodbury, all of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Aug. 7, 1981, Ser. No. 290,769

Int. Cl.[3] **B25B** *11/00, 31/00;* **B65D** *69/00*

U.S. Cl. 206—223 **8 Claims**



1. A work table useful in removing and attaching a watch strap connector between the spaced, facing inner lug surfaces of a watch, wherein the watch strap connector includes first and second spring-urged pintles in opposite ends of a tubular housing, said work table having a working surface with pad means thereon for supporting the watch during removal or attachment of the watch strap connector without marring the watch finish and having a pintle-compressing member supported thereon for facilitating attachment of the watch strap connector, said pintle-corresponding member having a first side wall and a second side wall connected together by an end wall of a thickness selected to compress the pintles of the watch strap connector when the pintle-compressing member is interposed between the inner lug surfaces with the first side wall adjacent one inner lug surface in partial overlapping relation thereto such that a portion of said one inner lug surface extends past the end wall and with second side wall in spaced, facing relation to the other inner lug surface with the watch strap connector therebetween having the first pintle engaged against said other inner lug surface and the second pintle engaged against the second side wall; wherein the second side

wall of the pintle-compressing member defines an elongated recess extending toward and terminating at the end wall, said recess being adapted to receive said second pintle and guide it toward the end wall, whereby the second pintle can be brought into engagement with said one inner lug surface simply by sliding said second pintle along the second side wall past the end wall where it will expand against the portion of said one inner lug surface extending past the end wall.

4,375,260

CUBOID CIGARETTES OR CIGARS PACK OR THE LIKE

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

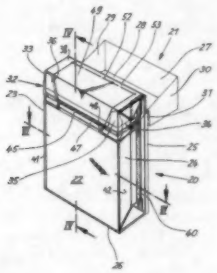
Filed Sep. 25, 1981, Ser. No. 305,769

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833389

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ B65D *85/10*

U.S. Cl. 206—264 **4 Claims**



1. A flip-top cigarette pack, comprising:

(a) a rectangularly shaped outer container (**20**) formed from a blank of relatively stiff paper, cardboard or the like, and having an openable and closeable lid top (**21**) hingedly connected to an upper rear edge of the container,

(b) a collar (**32**) extending upwardly from the opposite sides and front face of an upper open mouth of the container, the collar fitting within the lid top when closed,

(c) a cut-out portion (**36**) defined in a front wall (**35**) of the collar,

(d) a rectangularly shaped inner wrapper (**38**) folded from a blank of moisture and aroma proof material and configured to fit closely within the outer container, all seams and flaps of the wrapper being tightly joined to hermetically seal the wrapper,

(e) an opening flap (**49**) disposed on adjoining top and upper front surfaces of the wrapper and defined by a tear line (**52**), and

(f) a freely projecting finger grippable tab (**47**) provided on an edge of the flap and extending laterally across the wrapper proximate the cut-out portion in the front wall of the collar,

(g) the tab being formed by an adhesively sealed overlap of the wrapper material, and being downwardly directed and lying adjacent the front wall of the collar proximate an edge of the cut-out portion.

4,375,261

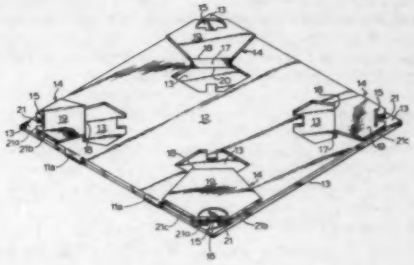
PAD AND BLANK THEREFOR TO SUPPORT AN OBJECT IN A SHIPPING CONTAINER

Thorne C. Kitchell, Spartanburg, S.C., assignor to Union Camp Corporation, Wayne, N.J.

Filed Mar. 16, 1981, Ser. No. 243,722

Int. Cl.³ B65D *85/00, 81/02*

U.S. Cl. 206—320 **7 Claims**



1. A pad to support an object in a shipping container comprising:

a panel, sized substantially the same as the inner dimensions of the said container and positioned to contact an end of said object, being die cut to provide a plurality of spaced stop-support assemblies having stops placed to contact the edge of the said end around its contour;

each said assembly comprising:

a stop hinged to the said panel and folded normal thereto;

a bracing member hinged to and folded outwardly away from the said stop and toward an adjacent edge of the said panel, the said bracing member being shaped and having a width so that at least one edge of the bracing member opposite the stop hinge will be aligned with and superimposed over the adjacent edge of said panel; and

means to secure the folded bracing member to the panel;

whereby the bracing member, secured to the panel and reinforced from moving outwardly by at least one inner side of the container, will lock the stop in a position normal to the panel.

4,375,262

CONTAINERS FOR FRAGILE ARTICLES

John Hrenyo, Towaco, N.J., assignor to Tekni-Plex, Inc., Brooklyn, N.Y.

Continuation of Ser. No. 22,637, Mar. 21, 1979, abandoned. This application Aug. 10, 1981, Ser. No. 291,775

Int. Cl.³ B65D *85/16, 85/42*

U.S. Cl. 206—418 **14 Claims**

1. A protective container for a fragile article comprising two hingedly connected housing elements; said housing elements providing, when in registry with each other, a closed container for said article; a major portion of the interior of said housing

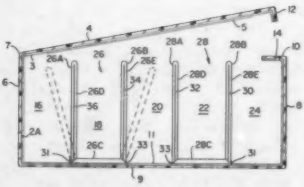
elements, when in registry, being disposed in spaced, radially expanded, recessed relation to said article; the interior of said housing elements having complementary arcuate segments to provide a surface for engaging the lateral margin of said contained article along a portion of its length; a segment of each of said major portions of said housing elements radially expanded and recessed from said contained article being modified to form in registry polygonally disposed ribs to provide an at least stability for said container and support of said container and article against compressive forces exerted radially on the exterior of said container; said radially expanded and recessed portions of said housing elements having, in addition, opposed exterior ends, defined by sloped, radially contracting surfaces terminating in coplanar flange components, extending outwardly and disposed substantially perpendicularly to the cross-sectional plane defined by said ribs; said ribs being positioned about midway between the opposite ends of said flange components; said hinged connection of said housing elements being provided along adjacent edges of said flange components; and said container being further adapted for retention within a sleeve polygonally shaped in cross-section and in such manner that the flange components of said container intersect diagonally opposed corners of said sleeve.

4,375,263

COMPARTMENTALIZED FILE BOX

Lawrence W. Dworkin, 24 White Oak Dr., North Caldwell, N.J. 07006

Filed Mar. 17, 1981, Ser. No. 244,798
Int. Cl.³ B65D *25/04, 85/00*
U.S. Cl. 206—425 **7 Claims**



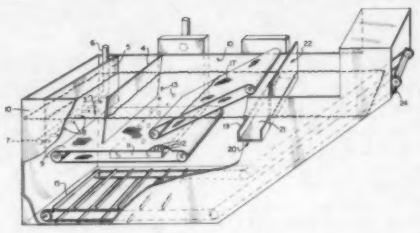
1. A compartmentalized file box, comprising:
a rectangular box having front, back, bottom and a pair of side members;
a cover formed with the back member so as to be integrally hinged thereto for opening and closing the cover;
means associated with the cover and the front member for securing the cover closed;
a plurality of U-shaped members each having a bottom and a pair of sides disposed within the box and extending transversely from near one box side member to near the other;
the bottoms of the U-shaped members being secured to the bottom of the box and the sides of said members cooperating with each other and with the front and back box members for forming a plurality of filing compartments within the box;
the sides of the U-shaped members and the inside of the back box member, and the inside cover of the box, carrying corresponding indicia for identifying the filed contents of the box and for facilitating retrieval thereof;
the sides of the U-shaped members are thin, flexible and transparent, and have pockets therein;
card-like members are encapsulated within the pockets for stiffening the sides of the U-shaped members;
the card-like members carry the indicia for identifying the filed contents of the box and for facilitating retrieval thereof, and the encapsulation of the card-like members within the pockets protecting said members from wear and tear and from environmental conditions; and
the pockets having holes therein whereby air is evacuated during encapsulation of the card-like members.

4,375,264

METHOD AND APPARATUS FOR SEGREGATING AND SEPARATELY RECOVERING SOLIDS OF DIFFERENT DENSITIES

Herschel F. Porter, Rehobeth Beach, Del., assignor to Doxsee Food Corp., Baltimore, Md.

Filed May 19, 1981, Ser. No. 265,066
Int. Cl.³ B03B *5/28*
U.S. Cl. 209—606 **26 Claims**



1. In a method of segregating and separately recovering fractions of a mixture of low bulk density and high bulk density solids the combination of steps comprising
submerging a mixture of low bulk density and high bulk density solids at an introduction location in a laminar flowing stream of liquid,
the liquid having a specific gravity about the same as that of the low bulk density solids and the low bulk density solids being substantially non-buoyant when submerged in the liquid;
the laminar flowing stream of liquid comprising a bottom defined at least in part by
providing a turbulent zone of rising air bubbles in in the laminar flowing stream of liquid downstream of the introduction location, the air bubbles being introduced from below the upper foraminous conveyor surface;
flowing the mixture at least partially through the turbulent zone of rising air bubbles;
continuously recovering the low bulk density solids from the top of the liquid at a location in or adjacent to the downstream end of the turbulent zone of rising air bubbles; and
removing the high bulk density solids from the bottom of the laminar flowing stream of liquid.

4,375,265

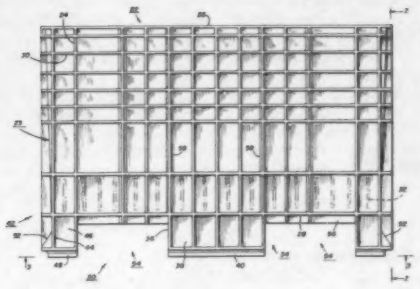
ONE PIECE MOLDED PALLET-CONTAINER

Gerrit van de Wetering, Leavenworth, and Jack J. Isler, East Wenatchee, both of Wash.

Filed Jul. 21, 1978, Ser. No. 927,157
Int. Cl.³ B65D *7/00*
U.S. Cl. 220—1.5 **1 Claim**

1. A one-piece rectangular pallet-container of foamed plastic and having like sides and like ends molded in a unitary manner to a bottom member and providing an open top, this pallet-container having means for the guiding thereunder and lifting thereof by the forks of a lift truck including: (a) a bottom member having downwardly extending ribs forming both a reinforcement and support surface for a pair of forks of a lift truck, this bottom member being formed to provide a plurality of entrances for said forks and with those ribs extending downwardly from the bottom member and transverse to an opening for the entry of a fork end of a fork lift having rib portions extending transversely thereof, these transversely disposed ribs being sloped to provide a guide ramp to direct the entering fork end to and past the transverse ribs; (b) a pair of end mem-

bers having both horizontal and vertical ribs in a generally arranged waffle pattern, the ribs extending from the side walls in a generally parallel pattern and from said open top to the bottom member; (c) a pair of side members having both horizontal and vertical ribs arranged in a generally waffle pattern, these ribs extending from the side walls in a generally parallel pattern from said open top to the bottom member; (d) a formed top disposed around the open upper portion of the pallet-container and providing a shoulder along the sides and ends of the



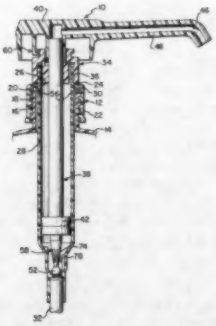
pallet-container; (e) leg portions provided at the four corners of the bottom member, these legs establishing a support plane of the bottom which is sufficiently distant from the bottom of the container for the entrance at a plurality of openings between the legs and intermediate supports for the free entry of a lift truck, and (f) a formed plug-shoulder formed on the bottom of the corner leg portions and the intermediate supports, this plug shoulder adapted to seat in and position said pallet-container in a formed open top of and on an immediately below pallet-container.

4,375,266

DOWN-LOCKING DISPENSING PUMP WITH SIDE-ORIFICED, PRODUCT-MIXING BALL HOLD-DOWN

Wallace F. Magers, Leawood, Kans., assignor to Realex Corporation, Kansas City, Mo.

Filed Nov. 18, 1980, Ser. No. 207,893
Int. Cl.³ B67D 5/42
U.S. Cl. 222—321 **4 Claims**



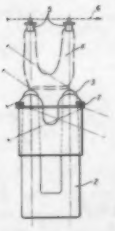
1. In a dispensing pump, the improvement comprising:
a tubular body having a collar at one end thereof and an inlet at the opposite end thereof;
a tubular plunger projecting through said collar and reciprocable within said body between depressed and extended positions;
a check valve operably associated with said inlet for opening and closing the same,
said valve opening the inlet during movement of the plunger toward said extended position for drawing products into the body through said inlet and closing the inlet during movement of the plunger toward said depressed position for forcing products out of the body through said plunger;
locking means associated with said collar for selectively, releasably locking the plunger in said fully depressed position;
an elongated, hollow, axially located projection on said plunger having a tip disposed for engaging said valve and holding the same in its position closing said inlet when the plunger is locked by said locking means in said fully depressed position; and
orifice means in said projection communicating the interior of said body with the interior of said plunger for the discharge of products therethrough during the movement of the plunger toward said depressed position,
said orifice means including a plurality of discrete, perimetrically spaced apart orifices located on the side of said projection whereby, as the product enters said projection during discharge, it is mixed by splitting into a plurality of turbulent streams passing through said orifices that recombine internally of the projection into a more homogeneous condition,
said orifices being elongated in the axial direction of the projection and cooperating to define a plurality of elongated legs separating adjacent ones of the orifices,
each of said legs being yieldably resilient for flexure during holding engagement of the tip with said valve when the plunger is in said fully depressed position.

4,375,267

APPARATUS FOR AUTOMATICALLY LAYING OUT A STOCKING, COLLANT OR THE LIKE

Chietti Giovanni, and Fabio Selvi, both of Florence, Italy, assignors to C.K.S. S.n.c., Florence, Italy

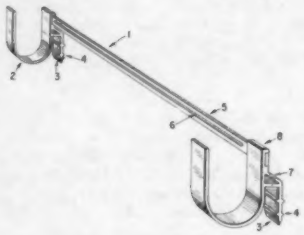
Filed Aug. 18, 1980, Ser. No. 178,717
Claims priority, application Italy, Sep. 4, 1979, 25475 A/79
Int. Cl.³ A47J 51/06
U.S. Cl. 223—112 **3 Claims**



1. An apparatus for automatically stretching out a stocking, collant or the like for inspection and treatment, said apparatus comprising:
a hollow rigid form for receiving said stocking;
an elongated element supported within said rigid form, said elongated element being movable between a first position in which one end of said elongated element is substantially within one end of said rigid form, and a second position in which said one end of said elongated element extends substantially beyond said one end of said rigid form;
first means for moving said elongated element between said first and second positions;
opposed rollers positionable with said rigid form therebetween;
second means for moving said rollers towards and away from said rigid form;

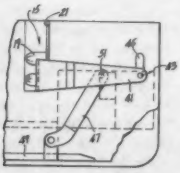
means for rotating said rollers;
gripper means adjacent said one end of said elongated element at said second position; and
means associated with said first and second means for moving, said means for rotating and said gripper means, for positioning said rollers adjacent said rigid form, rotating said rollers in a direction such that the periphery of said rollers move away from said one end of said elongated element, moving said elongated element from said first to said second position, and gripping the tops of stockings on said elongated element with said gripper means,
whereby said stockings are visible for inspection.

4,375,268
AUTOMOTIVE VEHICLE BRACKET
Gordon C. Speck, 126 Port Republic Rd., Harrisonburg, Va. 22801
Filed Jun. 5, 1981, Ser. No. 236,157
Int. Cl.[3] A47H *1/16;* A47F *5/08*
U.S. Cl. 224—42.45 R 6 Claims



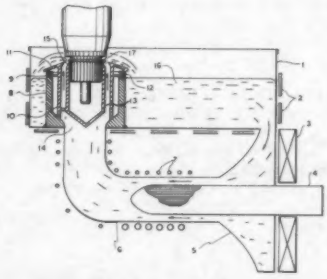
1. A unitary bracket for storing an elongated object, particularly an umbrella, within a closed vehicle comprising: a pair of cradle type hook members of U-shaped configuration, each cradle type hook member having a mounting arm connected thereto, spaced from and extending parallel to a leg of said U-shaped cradle type hook member by a bridge element, said bridge element extending from said leg to said arm, the arm to be preferably retained between the headliner and the door opening molding of the vehicle upon installation, the cradle type hook members are retained in a spaced symetrical relationship, with the arms and legs of each U-shaped cradle type hook member parallel to each other, by a cross bar member.

4,375,269
DISK-INDEXING MECHANISM FOR POWDER-ACTUATED TOOL ABSTRACT OF THE DISCLOSURE
Yves Bosch, St. Vallier; Jean Ollivier, Valence, and Roland Almeras, Tournon, all of France, assignors to Olin Corporation, New Haven, Conn.
Filed Jun. 12, 1980, Ser. No. 158,766
Int. Cl.[3] B25C *1/14, 1/18*
U.S. Cl. 227—8 7 Claims



1. In a powder-actuated tool of the type comprising:
a. a receiver;
b. a barrel reciprocally mounted in said receiver for movement between a forward position and a rearward position;
c. means defining a charge-receiving chamber in the breech end of said barrel;
d. a trigger mounted in said receiver and movable irrespective of the position of said barrel;
e. firing means, including a firing pin, actuable by said trigger to fire a charge disposed in said chamber;
f. means in said receiver defining a support for a removable charge magazine loaded with a plurality of charges, said magazine being movable in said support means so as to permit the sequential introduction of said charges between said chamber and said firing pin;
g. means for engaging said magazine at a predetermined point; and
h. means operably connecting said trigger to said engagement means to displace said magazine in step-wise manner to effect said sequential charge introduction;
the improvement comprising: means for rendering said displacing means inoperative unless said barrel is in said rearward position.

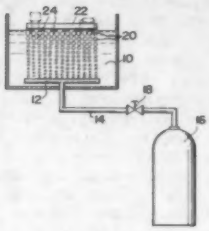
4,375,270
APPARATUS FOR SOLDERING THE WINDING TO THE COMMUTATOR OF AN ELECTRIC MACHINE
Pavel M. Minchev; Hristomir D. Hristov; Stoimen S. Balinov, all of Sofia, and Nikolay V. Yordanov, Village Lozen, all of Bulgaria, assignors to Institute Po Metaloznanie I Technologia NA Metalite, Sofia, Bulgaria
Filed Jan. 19, 1981, Ser. No. 226,383
Claims priority, application Belgium, Jan. 18, 1980, 46283
Int. Cl.[3] B23K *37/06*
U.S. Cl. 228—37 6 Claims



1. In an apparatus for soldering the windings of electric machines to the commutators therefor having a single-phase magnetic-hydrodynamic pump with metal conduit and a bath with molten solder and heaters, the improvement wherein the magnetic core of the single-phase magnetic-hydrodynamic pump is embraced by a generally horizontal metal conduit disposed underneath and spaced from the bottom of the bath, and the inlet of the metal conduit is connected to the bottom of the bath, while its outlet end is rigidly connected by means of a generally vertically disposed elbow with heaters to the bottom of the bath.

4,375,271
SOLDERING METHOD FOR ELECTRIC AND OR ELECTRONIC COMPONENT
Katsuhiko Tsuchikura, Tokyo, Japan, assignor to Aiwa Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1981, Ser. No. 287,798
Claims priority, application Japan, Aug. 1, 1980, 55-105107
Int. Cl.[3] H05K *3/34*
U.S. Cl. 228—180 R 3 Claims
1. A soldering method comprising conveying printed circuit

boards with electric and or electronic components temporarily fixed thereto along the top of a pool of molten solder, generating bubbles by blowing gas into the molten solder, the bubbles



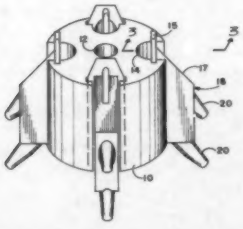
rapidly rising in the molten solder toward its top and striking the rising bubbles against components and the board to achieve soldering of the components to the board.

4,375,272

FIXED ANGLE TUBE CARRIER

John H. Sutton, III, Belmont, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 1, 1981, Ser. No. 279,491
Int. Cl.³ B04B 9/12, 15/00
U.S. Cl. 494—16 4 Claims



1. A tube carrier for use with externally shouldered sample tubes and a centrifuge rotor adapted to rotate about its vertical axis, said rotor having formed therein a plurality of symmetrically disposed vertical slots in its outer peripheral surface, said slots formed in the shape of a T and adapted for sliding engagement with a tube carrier, said carrier comprising:

a vertically elongated member having a T-shaped cross section adapted for sliding engagement with the slots of said rotor;

said carrier containing a plurality of circular recesses;

said recesses open at each end and adapted for holding an externally shouldered sample tube;

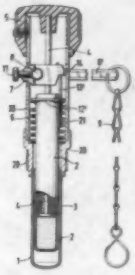
the longitudinal axis of each said recess disposed radially of the vertical axis of said rotor and at an angle less than 90° thereto.

4,375,273

COMBUSTION AUTOMATIC CONTROL SYSTEM

Helmut Erb, Offenbach am Main, and Werner Leese, Neu-Isenburg, both of Fed. Rep. of Germany, assignors to Samson Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,067
Claims priority, application Fed. Rep. of Germany, May 19, 1980, 3019010; Dec. 23, 1980, 3048745
Int. Cl.³ F22B 37/47
U.S. Cl. 236—21 R 2 Claims



1. In a combustion automatic control system to be acted upon by the temperature of water within a fired water heater, having an expansion thermostat to be acted upon by the water and placed in a control system housing, joined with said water heater, and a connection apparatus joining said thermostat with a combustion air inlet door of said water heater for changing the position of said door when the temperature of said thermostat is changed, the improvement wherein the system has, in connection with the housing, a temperature-sensitive element comprising a force-transmitting part joining said thermostat with said connection apparatus, and said temperature-sensitive element being joined by a fusible solder capable of fusing when heated over a predetermined limit temperature at the housing, so as to be effective for stopping automatic control of the door and causing the same to be automatically shut, and said connection apparatus having a driving ear, a housing of said control system, a jointpiece journalled in said housing, said ear drivingly acting on said jointpiece, and said ear having a tailpiece joined by the fusible solder with the thermostat.

4,375,274

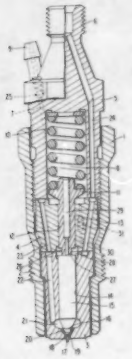
CHOKE PIN NOZZLE

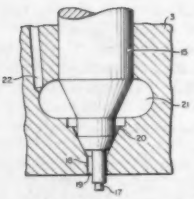
Frank Thoma, Stuttgart, and Kurt Obländer, Kernen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,682
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930716
Int. Cl.³ B05B 15/02
U.S. Cl. 239—117 10 Claims

1. A choke pin nozzle for diesel engines, the nozzle including a nozzle housing, a nozzle body disclosed in said housing, a fitted nozzle bore provided in the nozzle body, a nozzle needle including a choke pin axially guided in the nozzle bore, a helicoidal compression spring means for urging the nozzle needle into a closed position, and a spring chamber means for accommodating the compression spring means, characterized in that an intermediate piston is disposed between the compression spring means and the nozzle needle, the nozzle body includes a guide bore means for sealingly axially guiding the intermediate piston, an axially extending bore means is provided in the intermediate piston and communicates with the spring chamber means, the intermediate piston terminates in a bearing face means adapted to sealingly cooperate with an

upper surface of the nozzle needle, means are provided on the intermediate piston for enabling the intermediate piston to be displaced with respect to the nozzle needle, said guide bore means is widened in an area of a stroke zone of the intermediate piston so as to form an annular chamber, the annular chamber is in selective communication with the axially extending bore means in dependence upon a position of the bearing face means relative to the upper surface of the nozzle needle, the intermediate piston has a reduced diameter in an area of the bearing





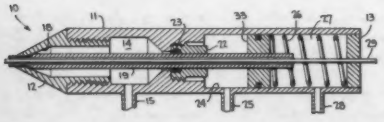
face means, the guide bore means is disposed in a separate neck portion interposed between the nozzle body and the nozzle head, the nozzle head includes a connection means enabling a connection with a nozzle conduit, a fuel leak connection means is provided and is in communication with the spring chamber means, a conduit means is provided for communicating the spring chamber means with the annular chamber, and in that a check valve means is interposed in the conduit means for controlling the flow therethrough, said check valve means opening in a direction of the annular chamber.

4,375,275

HIGH VISCOSITY PRODUCT DISPENSER

Dennis J. Argazzi, Newington, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Dec. 5, 1980, Ser. No. 213,484
Int. Cl.[3] B05B *15/02*
U.S. Cl. 239—117 **7 Claims**



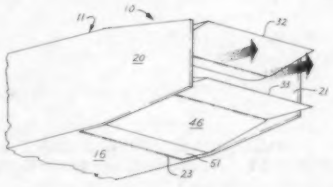
1. An apparatus for dispensing at least one product in the form of an adhesive of high viscosity, comprising a body having a forward section defining a product chamber terminating in a discharge orifice having a wall, and a rearward section defining a pressure cylinder, a hollow valve spindle lying inwardly concentric to said orifice and being slideably mounted in said body, said spindle having a piston operating in said cylinder and a forward end having a control valve engageable with a valve seat surrounding said orifice for controlling product discharge therethrough, said forward end being movable into said orifice into a discharge closing position, said cylinder having a first pressurized air inlet for retracting said forward end away from said orifice to open said orifice against the force of a return spring provided in said body, said chamber having a pressurized product inlet for forcing product through said orifice when opened, and said hollow valve spindle communicating with a second pressurized air inlet for blowing air through said orifice upon discharge closing for removing any product remaining at the outer end of said wall of said discharge orifice having a tendency to string onto said outer end after said one product is discharged.

4,375,276

VARIABLE GEOMETRY EXHAUST NOZZLE

Mieczyslaw Konarski, Lawrenceburg, Ind., assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 2, 1980, Ser. No. 155,336
Int. Cl.[3] B64C *15/06*
U.S. Cl. 239—265.29 **16 Claims**



1. An exhaust nozzle for a gas turbine engine comprising:
(a) a fixed structure;
(b) a plurality of primary flaps each having a portion pivotally connected with said fixed structure and having an inner surface curved convexly in a downstream direction;
(c) a plurality of secondary flaps disposed downstream of said primary flaps, each of said secondary flaps having a portion pivotally connected with a downstream end of one of said primary flaps in a cantilever arrangement therewith; and
(d) means for pivotally positioning said primary and said secondary flaps;
each of said primary flaps and each of said secondary flaps being pivotably positionable independently of any other primary or secondary flap.

4,375,277

ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

Teru Morishita, Shizuoka; Matsuyoshi Sugiyama, Susono, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 29, 1981, Ser. No. 230,114
Claims priority, application Japan, Apr. 4, 1980, 55-043451
Int. Cl.[3] B05B *5/04*; F16C *27/00, 32/06*
U.S. Cl. 239—703 **15 Claims**

1. A rotary type electrostatic spray painting device comprising:
a metallic housing;
a metallic rotary shaft rotatably arranged in said housing and having a front end and a rear end, said metallic rotary shaft having a hollow shaft portion having a first diameter

and a solid shaft portion having a second diameter which is substantially smaller than said first diameter;

a cup-shaped metallic spray head fixed onto the front end of said rotary shaft and having a cup-shaped inner wall;

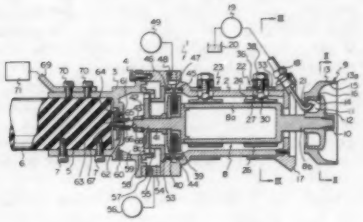
feeding means for feeding a paint onto said cup-shaped inner wall;

drive means cooperating with said metallic rotary shaft for rotating said rotary shaft;

non-contact type radial bearing means arranged in said housing and cooperating with said hollow shaft portion for radially supporting said metallic rotary shaft in a non-contacting state;

means for receiving compressed air;

a stationary annular plate fixed onto said housing and having



opposed side walls, said annular plate having a plurality of first air outflow bores formed on said opposed side walls;

a plurality of radially extending air passages, each being formed in said annular plate and having an outer end, and an inner end which is connected to said corresponding first air outflow bore, each of said outer ends being connected to said means for receiving compressed air;

a pair of runners fixed onto said solid shaft portion of said metallic rotary shaft and arranged on each side of said annular plate, each of said runners being slightly spaced from the corresponding side wall of said annular plate;

terminal means for receiving a negative high voltage and being connected to said metallic housing; and

electrode means arranged in said housing and electrically connecting said terminal means to said spray head.

4,375,278

SELF-TIGHTENING SLEEVE HOLDER

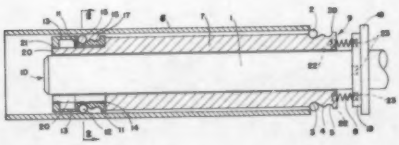
Harald Beeck, Remscheid, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik Ag, Remscheid-Lennep, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 300,124

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033852

Int. Cl.³ B65H 54/54

U.S. Cl. 242—46.2 **13 Claims**



1. A self-tightening sleeve holder carried on a machine by a rotary, cantilevered shaft with a machine-side stop means for the sleeve, said holder comprising:

a tube member axially slidable on said shaft between said stop means and a collar member rigidly fixed to the shaft, a plurality of axially elongated linking members on said tube member extending through a corresponding plurality of axial openings in said collar;

push means arranged about the shaft in front of the collar and carried on said linking means;

a first machine-side gripping ring arranged on the circumference of the tube member in a position to be pushed and frictionally engaged by the sleeve, during slipping of the sleeve onto said tube member, from a small diameter bed over a roll surface which mounts in the push direction into a larger diameter bed where said first ring tightly secures the sleeve to the tube member; and

a second gripping ring arranged on the circumference of the collar member in a position to be moved by said push means and placed in frictional contact with said sleeve, said movement taking place from a small diameter bed over a roll surface which mounts in the push direction into a larger diameter bed where said second ring also tightly secures the sleeve to the tube member.

4,375,279

BOBBIN ASSEMBLY

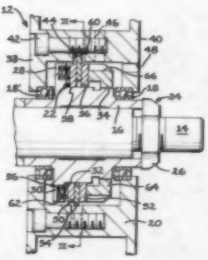
Keith E. Koch, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00377, § 371 Date Mar. 23, 1981, § 102(e) Date Mar. 23, 1981

PCT Filed Mar. 23, 1981, Ser. No. 278,504

Int. Cl.³ B65H 59/04

U.S. Cl. 242—156 **13 Claims**



1. In a bobbin assembly (10) for simultaneously dispensing a plurality of wires and controllably maintaining a predetermined tension on said wires, said assembly (10) having a shaft (14), and a plurality of reels (20) rotatably mounted on said shaft (14), the improvement comprising:

a plurality of hubs (16) each including a radial flange (28) having a plurality of circumferentially spaced recesses (30) formed in a radial wall (32) of said flange (28), each of said hubs (16) being removably mounted on said shaft (14) and positioned between said shaft (14) and a respective one of said reels (20);

means (24) for maintaining said hubs (16) in a fixed relationship with respect to said shaft (14);

first and second spaced reaction members (50,52) mounted on each of said hubs (16), at least one of said reaction members (50,52) on each hub (16) being axially moveable along the shaft (14) and each of said reaction members (50,52) being rotatably fixed on each hub (16);

a friction member (54) axially disposed between each of said first and second reaction members (50,52), each friction member (54) being axially moveable with respect to said hub (16) and rotatably fixed with respect to said reel (20); and,

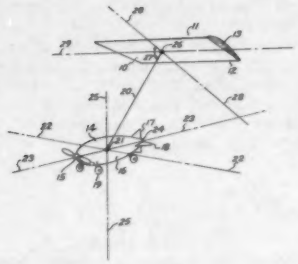
means (56) for controllably, axially biasing at least one of said reaction members (50,52) toward said respective friction member (54).

4,375,280

FREE WING FLYER

John D. Nicolaides, P.O. Box 1676, San Luis Obispo, Calif. 93406

Continuation-in-part of Ser. No. 437,969, Jan. 30, 1974, abandoned. This application May 13, 1977, Ser. No. 796,801
Int. Cl.³ B64C 3/30, 37/02
U.S. Cl. 244—13 7 Claims



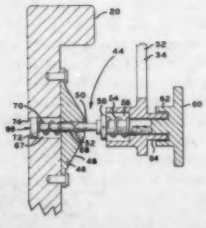
1. A flying device comprising a fuselage, a wing having an upper layer and a lower layer spaced from said upper layer for producing substantially the sole lifting force of the device, a connection member, a means for attaching the wing to the connection member so that the wing is freely able to roll and yaw with respect to the connection member, a means whereby the angle of pitch between the wing and connection member may be held fixed or changed in flight, a pivot means for attaching the connection member to the fuselage such that the fuselage is freely able to pitch, yaw and roll with respect to the connection member, a means for moving the fuselage and the wing relative to one another in roll, pitch, yaw, surge, and swerve movements, a motor propulsion unit for propelling said fuselage and wing thhrough the air to lift, drive and maneuver said flyer, and a means whereby buoyant dynamic flight is achieved in air or underwater, consisting of inflation of the wing, said resulting buoyancy providing velocity which in turn provides dynamic lift on the wing and thus buoyant dynamic flight, positive or negative.

4,375,281

AIRCRAFT CANOPY LOCK

George H. Nichols, Quartz Hill, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1981, Ser. No. 248,744
Int. Cl.³ B64C 1/14
U.S. Cl. 244—121 1 Claim



1. A simplified, manually-operable lock for releasably securing a canopy in a closed condition relative to an aircraft cockpit, comprising:

a plurality of dogs each pivotally mounted on the wall of said cockpit,

a pin mounted on said canopy and disposed in juxtaposed relation with each dog when said canopy is in closed condition relative to said cockpit, each dog having an arcuate hook adapted to engage with its corresponding pin when said canopy is in said closed condition;

means for rotating said hooks of said dogs into and out of secured relation with said pins including

a coupling pin rotatably mounted within said cockpit wall with the two extremities of said pin extending beyond said wall,

an internal arm fastened to the pin extremity within said cockpit and an external arm fastened to the other pin extremity, and

a pitman directly fastened to said dogs and said internal arm whereby manual rotation of either the internal arm or the external arm in a first direction causes the dogs and pins to engage and arm rotation in the opposite direction causes the dogs and pins to disengage;

latching means for releasably securing said internal and external arms against oscillation including

a spring-loaded release pin mounted on said internal arm, said spring-loaded release pin having first and seconds ends,

a pin receiver mounted on the inner cockpit wall adjacent to said internal arm and adapted to receive the first end of said release pin, said pin receiver having an annular pin ramp with a truncated conical configuration and a bore extending axially therethrough for receiving said first end of said release pin,

a pull-knob secured to said second end of said spring-loaded release pin for enabling the release of said pin from said bore of said receiver,

a spring-biased ejection pin disposed in said cockpit wall in coaxial alignment with said receiver bore, said ejection pin having first and seconds ends,

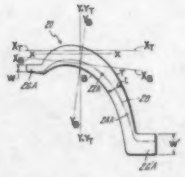
a push-button fastened to said first end of said ejection pin and said push-button being accessible from the exterior wall of said cockpit, said second end of said ejection pin situated in said receiver bore and said pin being able to translate in said bore when said push-button is manually depressed whereby said release pin may be ejected from said receiver bore when said push-button is depressed.

4,375,282

CORE CONFIGURATION FOR CASTING HOLLOW PARTS IN MATING HALVES

Robert A. Herold, Tolland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 30, 1980, Ser. No. 164,630
Int. Cl.³ B22C 9/10
U.S. Cl. 249—175 1 Claim



1. A flanged airfoil core for use in casting the mating halves of a hollow airfoil article having a cambered interior space of varying dimension defined by opposing contour surfaces of the halves; the airfoil core having a length and orthogonal x and y axes perpendicular thereto;

a camber shape cross section taken in the x-y axis plane normal to the length;

two longitudinal integral flanges, spaced apart along the x

axis of the cross section and running along the length of the core at opposing lengthwise edges thereof, one of the flanges having a thickness substantially greater than the thickness of the other flange, as the thickness is measured in the y axis direction;

a first side and a second opposed side, each consisting of a contoured surface, the sides defining the camber cross section shape along the length of the core, each of said surfaces terminating at the opposing lengthwise edges where the integral flanges are located; and

a generally uniform thickness along the camber shape cross section as compared to a core having identically shaped contoured surfaces and uniform thickness flanges arranged along longitudinal edges of the core with the identically shaped contoured surfaces.

4,375,283

METHOD OF CONTROLLING TENSIONS IN CONTINUOUS ANNEALING FURNACE AND SYSTEM THEREFOR

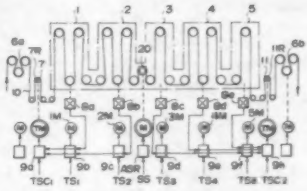
Yuji Shimoyama; Fumiya Yanagishima; Hiromasa Yamamoto, and Gunji Sakamoto, all of Chiba, Japan, assignors to Kawasaki Steel Corp., Hyogo, Japan

Filed Oct. 24, 1980, Ser. No. 200,326

Claims priority, application Japan, Oct. 31, 1979, 54-141502

Int. Cl.³ C21B *13/00*

U.S. Cl. 266—44 **2 Claims**



1. A method of controlling tensions of a steel strip in the heating, soaking and at least one cooling zones in a continuous annealing furnace of the type including helper rolls in each of the heating, soaking and cooling zones for guiding the steel strip and tension controllers provided at an input and output of said continuous annealing furnace, said method comprising:

providing a master speed hearth roll at a predetermined position between the helper rolls of the soaking zone and the helper rolls of the cooling zone, said master speed hearth roll acting as a boundary between said heating and soaking zones and said cooling zone;

controlling a speed of said steel strip by controlling a speed of rotation of said master speed hearth roll to be a preset value;

sensing a tension of said steel strip in each of said heating, soaking and cooling zones;

controlling a tension on said steel strip in said heating and soaking zones and said tension controller at said input of said continuous annealing furnace in response only to said sensed tension in said heating and soaking zones; and

controlling a tension on said steel strip in said cooling zone and said tension controller at said output of said continuous annealing furnace in response only to said sensed tension in said cooling zone.

4,375,284

FLY TIERS' VISE

Gerald J. Doiron, P.O. Box 277, Harwichport, Mass. 02646

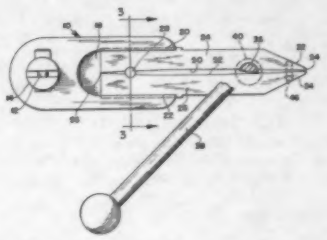
Filed Jun. 3, 1981, Ser. No. 269,994

Int. Cl.³ B25B *1/08*

U.S. Cl. 269—236 **9 Claims**

1. A fly tier's vise comprising a support, a pair of bars, means mounting the bars on the support in side by side relation, the means mounting the bars including a housing, a slot in the housing, said bars being located and held together in contacting relation at corresponding ends in the housing, the opposite ends of the bars extending out of the slot and the housing,

at least one of said bars having a concave surface facing the other bar, said bars being normally in contact at said opposite ends, the latter ends of the bars having hook clamping portions facing each other, said clamping portions gradually diverging inwardly of the bars from the extreme ends of the bars,



and means to temporarily separate the hook clamping portions of the bars to accept the bend of a conventional fish hook, said bars being of a resilient material to inherently hold the fish hook when said temporarily separating means is inoperative.

4,375,285

DEVICE FOR TRANSPORTING AND POSITIONING PRINTING PLATES

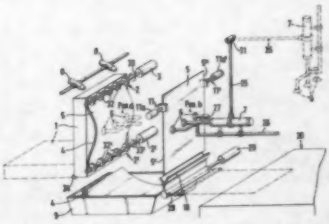
Werner Dennhardt, Taunusstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,846

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1980, 3025201

Int. Cl.³ B65H *1/02, 3/08*

U.S. Cl. 271—11 **12 Claims**



1. A device for transporting printing plates, having one coated and one uncoated surface, stacked in a holder to an exposure and developing station and for positioning them, comprising:

a holder for holding a plurality of printing plates stacked in alternating relationship with a plurality of separating sheets, said holder including means for selectively positioning it substantially perpendicularly to the direction of transport of the printing plates so that the uncoated surface of each printing plate faces toward the direction of transport;

a suction device for engaging the uncoated side of the first printing plate from the stack in said holder;

means, movable horizontally in the direction of transport, for transporting said suction device between a first position adjacent said holder and a second position displaced from said first position in the direction of transport, to

withdraw the engaged printing plate from the stack in said holder;

a selectively engageable gripping device for the lower edge of the withdrawn printing plate, said gripping device being positioned beneath the second position of said transporting means;

at least one nozzle positioned adjacent to said holder and pointing generally in the direction of transport for directing compressed air against the coated surface of the withdrawn printing plate; and

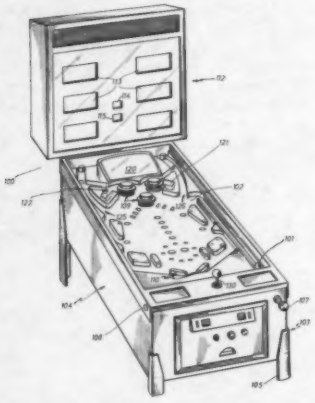
means, positioned above said gripping device, for laterally positioning a printing plate located in the second position of said transporting means.

4,375,286

ELECTRONIC GAME APPARATUS

Adolf Seitz, West Chicago, and John West Buras, Chicago, both of Ill., assignors to D. Gottlieb & Co., Northlake, Ill.

Filed Jul. 30, 1981, Ser. No. 288,491
Int. Cl.³ A63F *7/02, 9/22*
U.S. Cl. 273—121 A **13 Claims**



1. The combination of a pinball game and a video game comprising:

(a) a housing;

(b) means supported by said housing for defining pinball play, including a ball and a playfield for supporting the ball, flippers for propelling the ball on the playfield and ball actuated devices on the playfield for effecting selected pinball conditions when engaged by the ball;

(c) means supported by said housing, including a video selected display, for defining video play, where operation of the video play means defines video conditions; and

(d) means for enabling operation of said video play means dependent upon the ball achieving said selected pinball condition during pinball play to permit integrated pinball-video play.

4,375,287

AUDIO RESPONSIVE DIGITAL TOY

Henry C. Smith, 7629 Corozal, El Paso, Tex. 79915

Filed Mar. 23, 1981, Ser. No. 246,308
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—138 A **6 Claims**

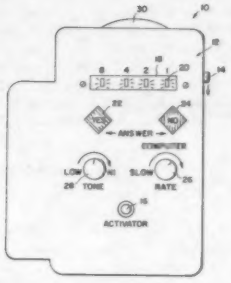
1. A digital toy providing a random response to an audible inquiry, comprising:

switch means having first and second positions;

response determining means activated during placement of said switch means in said first position for determining a random response;

audio detecting means activated during placement of said switch means in said first position for providing an enabling signal responsive to the detection of an audible inquiry;

display means activated by said enabling signal during the placement of said switch means in said second position for displaying the response determined wherein said display means comprises delay means for converting said enabling



signal into a timed signal, and circuit means for producing a sensory display output during said timed signal and upon termination thereof displaying said random response; and

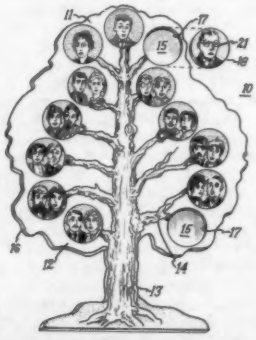
said circuit means comprises pulse means for producing output pulses during the duration of said timed signal, counter means for counting the output pulses, and optical display means for optically displaying the counter of said counter means.

4,375,288

AMERICAN FAMILY TREE GAME

Joseph G. Guertin, 233 Benedict Rd., Pittsfield, Mass.

Filed Jun. 22, 1981, Ser. No. 267,514
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—273 **2 Claims**



1. A family tree game comprising:

A plurality of tokens corresponding to representative family members;

A family tree board containing a plurality of means for retaining said tokens;

Card means for determining the placement of said family tokens on said tree board, said card means containing indicia denoting relatives and research means;

Said retaining means comprising a plurality of slots arranged in an array of two columns, one column denoting maternal ancestry and the other column denoting paternal ancestry;

Said card means comprising a deck of cards wherein said

relative cards are designated mother, father, brother, sister, aunt, uncle, grandparent, and wherein said research cards are entitled city vital records, church vital records, archive vital records, miscellaneous records, inheritance cards, and inconclusive research;

Said tokens comprising circular elements having a diameter slightly smaller than the diameter of said slots for insertion within said slots, and containing indicia representing said family members.

4,375,289

APPARATUS FOR MONITORING A BOUNDARY LINE

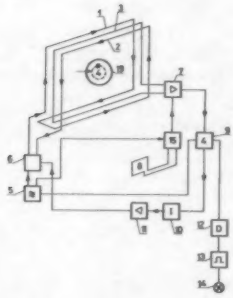
Karl-Heinz Schmall, Baden-Baden, and Piotr Sendor, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to PRECITEC Gesellschaft fur Präzisionstechnik und Elektronik mbH & Co. Entwicklungs und Vertriebs-KG, Baden-Baden, Fed. Rep. of Germany

Continuation of Ser. No. 926,203, Jul. 19, 1978, abandoned. This application Aug. 4, 1980, Ser. No. 174,936

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1977, 2732543

Int. Cl.³ A63B *63/00*; G08B *13/24*

U.S. Cl. 273—371 **1 Claim**



1. Apparatus for registering a chance event, comprising an object to be projected randomly over a boundary line, and means for monitoring a boundary line marking out an area in space and detecting the random passage of said object over the boundary line, said monitoring means comprising at least two approximately linear transmitting conductors provided along said boundary line for emitting electromagnetic fields of opposite polarity, electrical supply means for supplying alternating voltage in phase opposition respectively to said conductors so as to produce said fields, at least one first receiving means arranged for voltages to be generated therein by said electromagnetic fields and located so that said generated voltages normally counteract one another, an amplifier connected to said first receiving means, indicator means connected to said amplifier, said objects including means for influencing said electromagnetic fields of said transmitting conductors when passing over said boundary line thereby disturbing said counteracting voltages in said first receiving means and causing a signal to appear at said indicator means to indicate passage of said object over said boundary line, said monitoring means further comprising at least one second receiving means spaced from and outside of said electromagnetic fields of opposite polarity but arranged to receive interference signals generated by electromagnetic transmitting sources other than the said lines- transmitting conductors and said means included in the object, which interference signals are also received by said first receiving means and passed to said amplifier, said second receiving means being connected to said amplifier by way of compensation means for converting interference signals received by said second receiving means and feeding to said amplifier oppositely coupled signals relative to interference signals from said first receiving means so that interference signals received by said first and second receiving means are effectively compensated and suppressed.

4,375,290

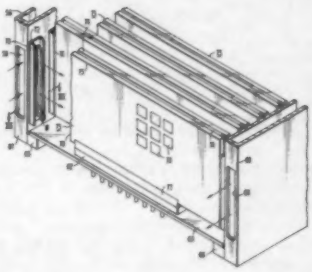
SLIDING COMPRESSION AIR SEAL FOR REMOVABLE ELECTRONIC UNITS

Alfred A. Zucchi, Severna Park; Frank E. Altoz, Baltimore, and John W. Hughes, Columbia, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1980, Ser. No. 209,555

Int. Cl.³ F16J *15/10*; H05K *7/20, 7/14*

U.S. Cl. 277—12 **20 Claims**



1. An air seal comprising:

a base having a lower surface and an upper surface inclined with respect to said lower surface;

said base having an opening from said lower to said upper surface for the passage of air;

a first layer of elastomeric material attached to said upper surface positioned in a closed path around said opening; and

a second layer of elastomeric material attached to the upper surface of said first layer of elastomeric material overlying said closed path around said opening.

4,375,291

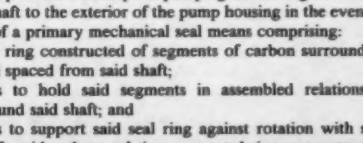
BACK-UP MECHANICAL SEAL

Arnold F. Padgett, Don Mills, Canada, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 8, 1981, Ser. No. 300,152

Int. Cl.³ F16J *15/46*; B65D *53/06*; F04D *29/08*

U.S. Cl. 277—27 **10 Claims**



10. A secondary mechanical seal means for a centrifugal pump to prevent the escape of pumping fluid along a rotatable pump shaft to the exterior of the pump housing in the event of failure of a primary mechanical seal means comprising:

a seal ring constructed of segments of carbon surrounding and spaced from said shaft;

means to hold said segments in assembled relationship around said shaft; and

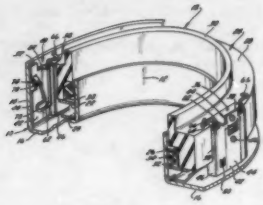
means to support said seal ring against rotation with said shaft; said carbon seal ring segments being so constructed and arranged to collapse under pressure of pumped fluid and to seal against said shaft upon failure of said primary mechanical seal means while permitting said shaft to rotate until shut-down of said pump.

4,375,292

TAKE-APART SEAL

Roger K. Ericson, Arlington Heights, Ill., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Apr. 23, 1982, Ser. No. 371,152
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—81 R **12 Claims**



1. A face seal assembly adapted to be easily and quickly inspected and repaired, including an annular housing having two axially facing ends, one of which is open and the other of which is closed, said housing having inner and outer cylindrical walls terminating in free edges which define the opening at said open end, each of said walls being joined at the other axial end thereof to an annular floor connecting said walls; an annular sealing element in said housing; and a spring in said housing urging said sealing element toward said opening; wherein the improvement comprises:

two releasable retention devices attached to said housing on diametrically opposed sides thereof, each device including

a latch having an engaged position in which it extends into interfering engagement with said sealing element to hold said element within said housing, and a disengaged position in which it is retracted from said interfering engagement to permit said elememnt to move freely out of said housing through the open end thereof; and

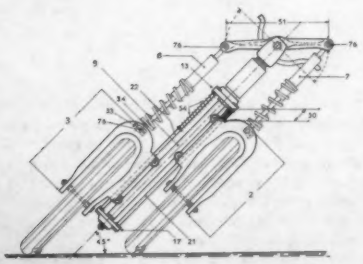
a spring for biasing said latch into said engaged position.

4,375,293

FRONT SUSPENSION AND STEERING SYSTEM FOR CYCLES AND MOTORCYCLES HAVING TWO INTERDEPENDENT POINTS OF SUPPORT ON THE GROUND

Francisco Solbes, 3, rue Lavoisier. Lambres, Douai, France (59500)

Filed Nov. 4, 1980, Ser. No. 203,957
Claims priority, application France, Nov. 7, 1979, 79 27419
Int. Cl.³ B60G *7/00*
U.S. Cl. 280—21 A **15 Claims**



1. A cycle having a relatively long and narrow frame, a pair of members at one end of said frame for contacting a supporting surface and suspension means supporting and interconnecting said members and said frame, said suspension means comprising:

an arm pivotally mounted from said frame intermediate the ends of the arm for pivotal movement about an axis substantially parallel to the length direction of said frame;

a pair of substantially parallel, rectilinear guides extending in the direction downwardly of said arm and mounted from said frame in fixed vertical relation thereto, said guides being horizontally spaced from each other;

a pair of supports, one of said supports being mounted on one of said guides for rectilinear movement toward and away from said arm and the other of said supports being mounted on the other of said guides for rectilinear movement toward and away from said arm;

first means connecting one of said members to one of said supports for movement therewith;

second means connecting the other of said members to the other of said supports for movement therewith; and

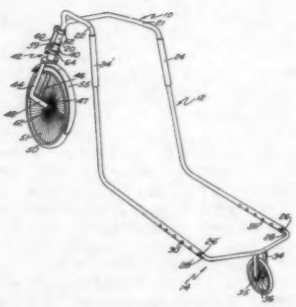
means connecting the respective ends of said arm respectively to one of said supports and to the other of said supports, whereby said members are movable in opposite directions with respect to each other and along rectilinear, parallel paths with tilting of said frame in a direction transverse to the length of the frame.

4,375,294

JOGGING VEHICLE

Carl C. Beauchamp, 565 Shippeetown Rd., East Greenwich, R.I. 02818

Filed Mar. 10, 1981, Ser. No. 242,369
Int. Cl.³ B62B *11/00*; A63H *3/00*
U.S. Cl. 280—87.02 R **4 Claims**



1. A jogging vehicle comprising a pair of spaced bars extending generally horizontally at the rear portions and rising at acute angles to the vertical at their forward portions, said bars being spaced sufficiently to accommodate a jogger between them; a first U-shaped bar connected to the rear spaced ends of the horizontal portions;

a single wheel supporting said first U-shaped bar;

means including a second single wheel support joining the forward portions of said spaced bars;

said two wheels being in tandem relation;

handle grip means on said forward rising portion of the spaced bars to maintain the vehicle vertical or at an angle to the vehicle for turning the vehicle.

4,375,295

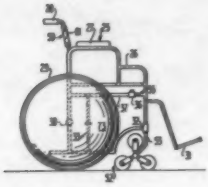
DETACHABLE BACKREST FOR WHEELCHAIR

Frank Volin, 3221 Quitman St., Columbia, S.C. 29204

Division of Ser. No. 31,833, Apr. 20, 1979, Pat. No. 4,264,085.
This application Jan. 21, 1981, Ser. No. 226,642
Int. Cl.³ A61G *5/00*
U.S. Cl. 280—289 WC **4 Claims**

1. In a wheelchair of the folding type having substantially

vertical side frame sections, main wheels journaled on the side frame sections, front caster wheels and footrest means, the improvement comprising a quick detachable backrest extending between and connected with said side frame sections, said backrest including a backrest web extending between handle bar extensions of the side frame sections, coupling devices clampingly secured to said handle bar extensions, coacting



quick release coupling devices secured to opposite ends of said web, and the first-named coupling devices including a coupling part on each handle bar extension having headed studs, the second-named coupling devices comprising at each end portion of said web opposing web clamping bars having registering quick release openings for the headed studs formed therein, said web being apertured to receive said studs, and a lifting extension on one of the clamping bars.

4,375,296

CLIPBOARD

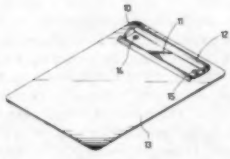
Shih H. Chang, No. 2-12, Chang Lu Rd., Chang Hwa City, Taiwan

Filed Jul. 31, 1981, Ser. No. 288,726

Claims priority, application Taiwan, Apr. 2, 1981, 7021791

Int. Cl.³ B42D *17/00*

U.S. Cl. 281—45 **5 Claims**



PRIOR ART

1. A clipboard, comprising:

a backing board;

at least two inserts;

a clip mount attached to one end of said backing board, said clip mount having an elevated portion and two grooves, said grooves located on each side of said elevated portion and said inserts being inserted in said grooves;

a clip

said clip mount and said backing board having two sets of adjacent openings therethrough;

two coil springs extending through said openings and being stopped at the rear side of said backing board, said clip being telescopically received in and attached to said springs and each of said springs being telescopically received in one of said inserts.

4,375,297

QUICK COUPLING DEVICE

John Persson, Grödinge, Sweden, assignor to Nolek System AB, Norsborg, Sweden

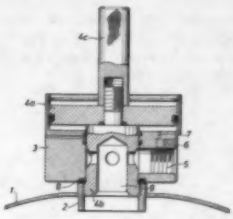
PCT No. PCT/SE80/00089, § 371 Date Dec. 25, 1980, § 102(e) Date Nov. 19, 1980, PCT Pub. No. WO80/02316, PCT Pub. Date Oct. 30, 1980

PCT Filed Mar. 26, 1980, Ser. No. 217,018

Claims priority, application Sweden, Apr. 25, 1979, 7903650

Int. Cl.³ F16L *25/00*

U.S. Cl. 285—12 **5 Claims**



1. A quick coupling device for a fluid-tight temporary connection to a threaded pipe nipple having an axial end surface located in a substantially radial plane relative to the axis of the nipple, said device comprising:

(a) a substantially cylindrical casing;

(b) a piston displaceably mounted in said casing; said parts being axially movable relative to each other, said piston having a through passage permitting the flow of pressurized fluid to said nipple;

one of said parts (a) and (b) being provided with a thread dimensioned to be screwed into engagement with the thread of the pipe nipple by relative rotation of said one part and said nipple, the other part being adapted to be permanently connected to a pressurized fluid conduit;

(c) and a seal at the axial end surface of said other part and dimensioned to seal against said axial end surface of the pipe nipple,

said casing and said piston defining therebetween an actuating chamber for connection to a source of fluid under pressure to achieve relative displacement of said two parts, said actuating chamber being without fluid connection to said through passage, an effective sealing between the coupling device and the nipple being achieved by first screwing said one part into threaded engagement with said nipple and then applying said actuating fluid to said actuating chamber.

4,375,298

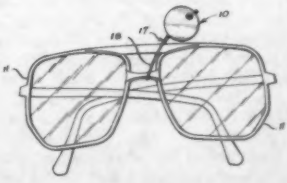
CINCH TYPE SEAL

John F. Stoffel, Eastchester, N.Y., assignor to Stoffel Seals Corporation, Tuckahoe, N.Y.

Filed Feb. 12, 1981, Ser. No. 233,718

Int. Cl.³ B65D *33/34*

U.S. Cl. 292—307 R **7 Claims**



1. A cinch type seal comprising a body having a side wall, an elongate cord means having at least one strand movably em-

bedded within said body and having first and second portions projecting outwardly from first and second sections, respectively, of said side wall, said body having an opening located adjacent to said second section of said side wall, said second portion having a free end, said cord means passing through said opening generally normal to the axis thereof, said cord means and body having a relatively high coefficient of friction so that they are movable relative to each other only with difficulty, whereby the first portion of said cord means which extends from said first section of said body may be attached to an article to be sealed after which said body is cinched up to the article and substantially all of said second portion of said cord means which extends from said second section of said body adjacent to said opening is removed so that movement of said body away from the article causes said free end of said cord means to pass through said opening.

4,375,299

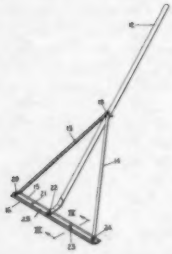
AQUATIC WEEDER

Philip E. Laven, 2662 Sharon, SW., Wyoming, Mich. 49509

Continuation-in-part of Ser. No. 971,984, Sep. 4, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 229,333

Int. Cl.[3] **A47F** *13/06*

U.S. Cl. 294—19 R **4 Claims**



1. An aquatic weeder for removing weeds from a lake or other body of water comprising an elongated handle and a generally flat elongated blade assembly rigidly mounted transversely to the handle at one end thereof, the axis of said handle being at an angle of about thirty degrees above the minor axis of said blade assembly and generally perpendicular to the major axis of said blade assembly, the blade assembly having exposed cutting edges facing forwardly and rearwardly such that weeds are removed from a lake bottom by sliding the blade assembly in a forward and backward direction along the lake bottom, the blade assembly being mounted at an inclined angle with respect to the handle such that when the handle is held in an inclined position by an operator and the blade assembly is moved forward and backward along the lake bottom to cut weeds located in front of the operator, the blade assembly will lie flat against the lake bottom and will slide along the lake bottom in a direction parallel to the lake bottom;

a pair of rigid support straps, one end of each said strap being rigidly attached to said handle and the other end of one of said straps being rigidly attached to one end of said blade assembly and the other end of the other strap being rigidly attached to the other end of said blade assembly; and

said blade assembly comprising a generally rectangular, flat cutting blade sandwiched between a pair of rigid, generally rectangular support plates, the width of said plates being less than the width of said blade so that the blade edge extends beyond the plates at both the forward and rearward sides of said plates.

4,375,300

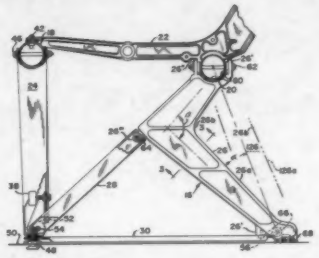
FRAMING SYSTEM FOR AIRCRAFT PASSENGER SEAT

William A. Long, Harwinton; Ward E. Fischer, Torrington, and Rene J. Bruneile, Wolcott, all of Conn., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 20, 1980, Ser. No. 208,955

Int. Cl.[3] **A47C** *15/00*

U.S. Cl. 297—232 **5 Claims**



1. A framing system for supporting a plurality of seats in a multi-passenger seating unit having a forward stretcher member, a rearward stretcher member positioned parallel to and spaced from said forward stretcher member, a plurality of fore and aft extending support members attached to each of said stretcher members, a plurality of seat cushion supporting panels joined to said stretcher members and located between adjacent pairs of said plurality of support members, a plurality of front leg support members attached to and extending downwardly from said forward stretcher member and adapted to be attached at their lower ends to a seating track member, a plurality of rear leg support members attached to and extending downwardly from said rear stretcher member and adapted to be attached at their lower ends to a seating track member, and a track covering connecting member being joined to the lower ends of said front leg and near leg support members, the improvement wherein said rear leg support member is characterized in that it is of an integral, generally inverted "L" shape with the long leg of the "L" terminating at the lower end of said rear leg support member and with the short leg of the "L" being attached to said rear stretcher member, the juncture of the long and short legs including a connection portion at its forwardmost surface to which the upper end of a compression member is joined, said compression member being joined at its lower end to the lower end of said front leg support member, the longer leg of said rear leg support member being directed upwardly and forwardly from the point where it is adapted to be attached to the seating track member at such an angle that the major portions of the rear surfaces of both said longer leg of said "L" and said shorter leg, as measured from their juncture, lies forwardly of an imaginary line connecting the axis of the rear stretcher member and said point at which said rear leg support member is adapted to be attached to the seating track member.

4,375,301

CHAIR SEAT ADJUSTMENT ASSEMBLY

Charles C. Pergler, Grand Rapids, and Jack R. Knoblauch, Byron Center, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

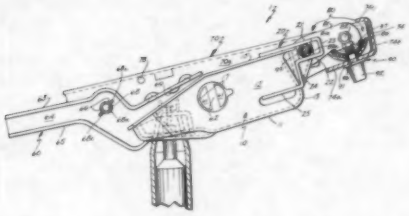
Filed May 1, 1980, Ser. No. 145,624

Int. Cl.[3] **A47C** *11/02*

U.S. Cl. 297—313 **9 Claims**

1. A chair seat pitch adjustment assembly having first support means, a seat support member pivotally mounted with respect to said first support means at one point and adjustment means interconnecting said seat support with said first support means for adjusting the angle of said seat support member with respect to said first support means, the improvement in said

assembly comprising: said adjustment means including a pivot bracket pivotally mounted to said first support means on one pivot axis and to said seat support member on a second pivot axis; said pivot bracket including a cylindrical wall extending generally laterally with respect to the sides of said seat support member, said cylindrical wall defining at least a portion of the wall of a right circular cylinder whose axis of revolution lies on said second pivot axis; said cylindrical wall including at least one helically oriented slot therein; a slide slidably mounted on said seat support member for generally lateral movement with respect to the sides of said seat support member, said slide including projection means projecting through said helical slot in said cylindrical wall whereby as said slide is moved laterally, said cylindrical wall and therefore said pivot bracket are rotated about said second pivot axis, thereby changing the relative elevation of said first pivot axis with respect thereto and thereby changing the pitch of said seat support member with respect to said first support means; means allowing at least one of said pivotal mountings between said seat support member and said first support means, said seat support member and said pivot bracket and said pivot bracket and said first support means to shift when said pivot bracket is rotated; said seat support member including a wall having a generally rectilinear slot therein extending generally laterally with respect to the sides of said seat support member; said projection means on said slide extending through said generally rectilinear slot; and an insert of semi-cylindrical configuration corresponding to the configuration of said cylindrical wall and being seated therein, said insert including a helical slot therein aligned with said helical slot in said cylindrical wall.



4,375,302

PROCESS FOR THE IN SITU RECOVERY OF BOTH PETROLEUM AND INORGANIC MINERAL CONTENT OF AN OIL SHALE DEPOSIT

Nicholas Kalmar, 637 Arlington Ave., Berkeley, Calif. 94707

Filed Mar. 3, 1980, Ser. No. 126,955

Int. Cl.³ E21B *43/28*; E21C *41/10, 41/14*

U.S. Cl. 299—4 **33 Claims**

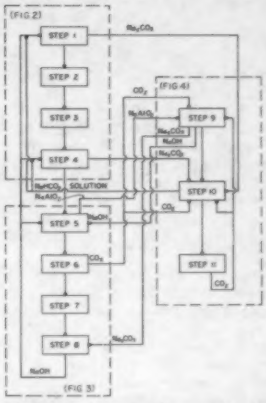
1. A process for obtaining useful products from an oil shale formation including intermixed nahcolite and dawsonite comprising the following steps:

(1) drilling a series of wells into said formation from aboveground,

(2) injecting into said formation through some of said wells an aqueous solution of sodium hydroxide containing a surfactant, so that the sodium hydroxide reacts with the nahcolite to yield sodium carbonate and water, as a sodium carbonate solution.

(3) withdrawing the sodium carbonate solution through other said wells for further processing, and drying the formation,

(4) thereafter retorting with controlled pyrolysis the shale in situ, while sending air in controlled amounts down some of said wells, and recovering petroleum products up through other said wells, and



(5) thereafter sending water through some of said wells into the retorted formation to produce steam and recovering the steam through other said wells.

4,375,303

CHANGE-OVER VALVE DEVICE UTILIZING THE LOWER PRESSURE OF A DOUBLE INPUT PRESSURE SYSTEM FOR INCREASING THE DEGREE OF DELIVERED OPERATING PRESSURE

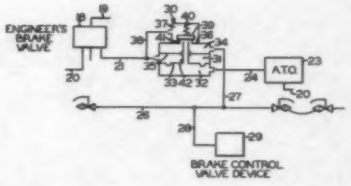
Hideo Tamamori, Kobe, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Dec. 11, 1980, Ser. No. 215,475

Claims priority, application Japan, Dec. 11, 1979, 54-161295

Int. Cl.³ B60T *15/02*

U.S. Cl. 303—40 **4 Claims**



1. A change-over valve device for use in a fluid pressure operable brake system including an engineer's brake valve device manually operable for initiating a first control pressure output, an automatic train operator operable responsively to certain dangerous conditions along the right-of-way for automatically initiating a second control pressure output, a brake pipe subjectable to said control pressure outputs, and a brake control valve device connected to said brake pipe, wherein the improvement comprises said change-over valve device comprising:

(a) a casing having a pair of control pressure chambers therein separated by a reciprocable piston member and connected to said engineer's brake valve device and said automatic train operator, respectively,

(b) said casing also having formed therein a delivery chamber isolated from said control chambers by a first partition formed in said casing, said delivery chamber being connected to said brake pipe;

(c) a supply valve member operably interposed between said delivery chamber and a supply pressure chamber formed

in said casing and also connected to the engineer's brake valve device, said supply valve member normally being biased to a seated position on a valve seat formed in a second partition formed in said casing between said delivery chamber and said supply pressure chamber; and

(d) a tubular piston stem extending axially from said reciprocable piston member through a central opening, with sealing sliding contact therewith, formed in said first partition, with a free open end of said tubular piston stem terminating adjacent said valve member,

(e) said reciprocable piston member being axially movable, in response to a pressure differential thereacross when the pressure in one of said control chambers is greater than that in the other, in one direction in which said supply valve member is engaged by said tubular piston stem and operated to an unseated position relative to said valve seat for communicating said supply chamber with said delivery chamber, and

(f) said reciprocable piston member being axially movable, in response to a pressure differential thereacross when the pressure in the other of said control chambers is greater than that in said one control chamber, in an opposite direction in which said supply valve member is disengaged by said tubular piston stem and biased to a seated position on said valve seat, said one control chamber being communicated with said delivery chamber via said tubular piston stem.

4,375,304

DUAL-CIRCUIT PRESSURE CONTROL VALVES

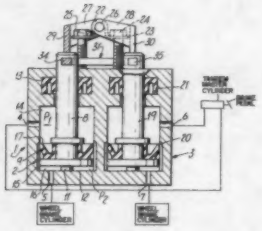
Bernd Schopper, Frankfurt am Main; Derek Lowe, Glashuetten; Hans-Dieter Reinartz, Frankfurt am Main, and Peter Tandler, Falkenstein, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,688

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002142

Int. Cl.³ B60T *15/06*

U.S. Cl. 303—52 **6 Claims**



1. A dual-circuit pressure control valve for a dual-circuit brake system to control braking pressure therein comprising:

two control pistons disposed in a housing in a parallel side-by-side relationship, each of said two pistons having a longitudinal axis and a valve associated therewith to control braking pressure in a different one of said dual brake circuits; and

an arrangement to provide a preloading force for each of said two pistons including

an axle disposed adjacent an end of each of said two pistons and between said adjacent ends of said two pistons in a perpendicular relationship to an imaginary line interconnecting said longitudinal axes of said two pistons, and

two preloaded L-shaped swivelling levers each associated with and pressed in a direction toward a different one of said two pistons, one leg of one of said two swivelling levers being connected to one end of said axle and one leg of the other of said two swivelling levers being connected to the other end of said axle, the other leg of each of said two swivelling levers being parallel to said axle bearing on said adjacent end of said associated one of said two pistons to provide a preloading force for said associated one of said two pistons.

4,375,305

CIRCULATING TYPE BALL SPLINE BEARING

Hiroshi Teramachi, 2-34-8,, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan

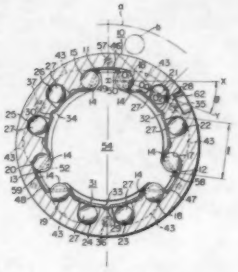
Filed Jan. 26, 1981, Ser. No. 228,096

Claims priority, application Japan, Feb. 25, 1980, 55-021619

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **1 Claim**



1. A circulating type ball spline bearing including an outer sleeve, opposite end lids, a retainer and ball bearings, characterized in that said bearing comprises:

U-shaped channels formed axially on the inner periphery of said outer sleeve and each having a pair of concave raceways substantially of the same curvature as the ball bearings on and along opposite side walls thereof;

non-load carrying ball grooves formed axially on the inner periphery of said outer sleeve at a predetermined distance from said U-shaped channels such that the balls in said non-load carrying ball grooves have a small contact angle lying close to the torque direction;

U-shaped turn grooves formed on the inner periphery of said outer sleeve continuously to said concave raceways and non-load carrying ball grooves for turning the direction of circulating balls;

U-shaped turn grooves formed in each one of said end lids fixedly fitted on the opposite end faces of said outer sleeve for reversing the direction of load carrying or non-load carrying balls; and

a number of slits formed in said retainer in projected wall portions in engagement with said U-shaped channels of said outer sleeve in face-to-face relation with said concave raceways, each one of said slits having a curved guide tongue at the opposite ends thereof to cover the open ends of said non-load carrying ball grooves;

the raceways constituted by said outer sleeve, end lids and retainer being filled with said ball bearings.

4,375,306

CABINET AND TABLE UNIT FOR A VEHICLE

Charles L. Linder, 801 Spruce St., Hoquiam, Wash. 98550

Filed Mar. 16, 1981, Ser. No. 244,213

Int. Cl.³ A47B *53/00*; B60P *1/64*

U.S. Cl. 312—250 **8 Claims**

1. A cabinet-table unit adapted for installation in a vehicle bed space with an exterior access opening and for sliding movement between a stowed position within said space and a

use position in which the unit projects partway out of said space through said exterior access opening, comprising:

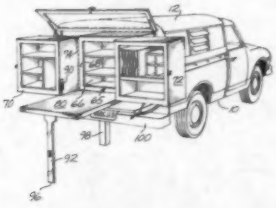
a base having first and second end portions;

slide means between said base and the bed of the vehicle, mounting said unit for sliding movement between its stowed position and use position;

a first cabinet mounted onto the first end portion of the base, said first cabinet having an access opening facing towards the second end portion of the base;

a second cabinet hinge connected to the first cabinet, for movement between a first position wherein it is positioned over the second end portion of the base, and a second position in which it is positioned laterally outwardly from the second end portion of the base, said second cabinet having an access opening which faces the same direction as the access opening of the first cabinet when the second cabinet is in its second position;

a third cabinet which is also hinge connected to the first cabinet, for movement between a first position wherein it is positioned over the second end portion of the base, and a second position in which it is positioned laterally outwardly from the second end portion of the base, said third cabinet having an access opening which, when the third cabinet is in its second position, faces in the same direction as the access opening of the first cabinet; and



an inner cabinet mounted onto the first end portion of the base, endwise of the first cabinet in the direction opposite the second end portion of the base, said inner cabinet having a side access opening;

wherein the access openings of the second and third cabinets face each other when the second and third cabinets are in their first positions;

wherein, when the unit is in its stowed position, the second and third cabinets are in their first positions; and when the unit is in its use position, the second end portion of the base and the second and third cabinets are located outside of the bed space of the vehicle, the second and third cabinets are in their second positions, and the access openings of the first, second, and third cabinets face outwardly of the bed space;

wherein the slide means is offset laterally from the center of the exterior access opening of the bed space to offset the unit and provide access to said side access opening through said exterior access opening when the unit is in its use position by moving the second cabinet into its first position; and

wherein the second end portion of the base functions as a table when the unit is in its use position.

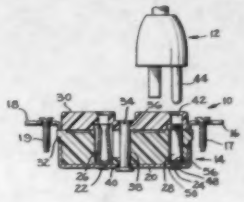
4,375,307

GROUNDING RECEPTACLE WITH LOW RESISTANCE GROUND

Brian E. Rock, Riverside, R.I., assignor to General Electric Company, New York, N.Y.

Filed Mar. 30, 1981, Ser. No. 248,747
Int. Cl.³ H01R *4/66*
U.S. Cl. 339—14 R **4 Claims**

1. A receptacle comprising an insulating body containing current carrying contacts, a mounting strap mounted about said insulating housing, a grounding contact mounted to the mounting strap, said grounding contact being coated with a



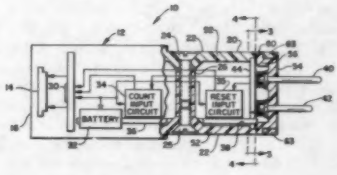
relatively thick coat of tin metal; and said contact being riveted to said mounting strap after being tin-coated or indium-coated.

4,375,308

PLUG-IN COUNTER MODULE

Richard P. Wilkinson, Simsbury, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed May 15, 1981, Ser. No. 263,849
Int. Cl.³ H01R *13/66*
U.S. Cl. 339—17 C **5 Claims**



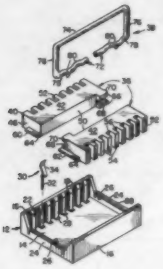
1. In a plug-in counter module having a counter and a counter operating circuit with male electrical terminals at a rear end of the module adapted to be axially inserted into corresponding female electrical terminals of a plug-in counter receptacle, upon axial insertion of said rear end of the plug-in counter module into the receptacle, for electrical operation of the counter, the improvement wherein the counter operating circuit comprises a plurality of individual, selectively mountable male terminals, an electrical terminal board, extending transversely of the axis of insertion of the module, with a plurality of transversely spaced electrical terminals providing a plurality of different transversely spaced male terminal positions respectively at the rear end of the counter module in axial alignment and electrical connection with respective board terminals, a transversely extending male terminal support means mounted in predetermined spaced relationship with said terminal board rearwardly thereof, the male terminal support means having means for supporting a male terminal at each of said transversely spaced male terminal positions and being separable from the terminal board, for selectively mounting male terminals at a plurality of different male terminal positions for insertion into respective female terminals at different transverse positions thereof in different plug-in counter receptacles, and mounting means for mounting the transversely extending male terminal support means in said predetermined relationship with said terminal board and for selectively separating the male terminal support means from the terminal board to provide for selectively mounting the male terminals.

4,375,309

ZERO INSERTION FORCE CONNECTOR BLOCK

Wendell L. Griffin, South Bend, Ind., assignor to Wells Electronics, Inc., South Bend, Ind.

Filed Dec. 24, 1980, Ser. No. 220,079
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—75 M **17 Claims**



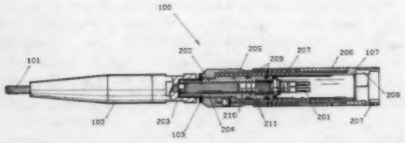
1. A zero insertion force connector block of the type having a body, two rows of contact terminals on opposite sides of the body, a pair of follower members between the rows of terminals with one follower member extending along each row of terminals and an interface between the follower members, and means securing the follower members to the body while permitting free movement of the follower members towards and away from the terminals wherein the improvement comprises an expansion element loosely confined in the interface for movement free of the body toward and away from the terminal rows, said element being movable between a first position where the follower members are free for movement towards each other to reduce the width of the interface and a second position where the element forces the follower members apart to increase the width of the interface, each follower member stresses terminals in one of the rows and the follower members and element float between the terminal rows, movement of said element between said positions controlling the movement of said terminals between open positions and closed positions wherein the terminals make electrical connections with adjacent contacts.

4,375,310

SELF-LOCKING CABLE CONNECTOR

Leon H. Robinson; Jerry M. Speers, and Adelber Barry, all of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Apr. 3, 1981, Ser. No. 250,975
Int. Cl.³ H01R *13/625, 17/04*
U.S. Cl. 339—88 R **3 Claims**



1. A self-locking cable connector comprising:

(a) a receptable which has:

(i) an inner sleeve having an end portion, an internal axial keyway, an internal circumferential keyway which intersects the axial keyway, and a slot in the end portion which is aligned with the axial keyway and intersects the circumferential keyway.

(ii) an outer sleeve which is moveably mounted on the inner sleeve and which has an axial tooth that is adapted to fit into the slot of the inner sleeve;

(iii) means for biasing the outer sleeve toward the end portion while maintaining the tooth in the slot; and

(iv) an electrical connector mounted in the inner sleeve; and

(b) a plug which has:

(i) a base having an outwardly extending key that is adapted to be inserted into the keyways of the inner sleeve; and

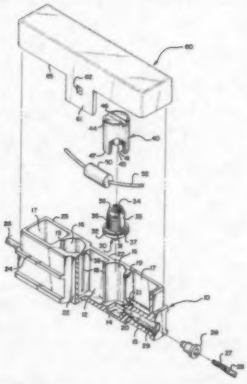
(ii) an electrical connector mounted on the base and adapted to mate with the connector of the receptacle to provide an electrical connection when the plug is inserted into the receptacle by inserting the key into the axial keyway and contacting the tooth to move it axially away from the end portion to clear the circumferential keyway and rotating the key into the circumferential keyway.

4,375,311

DIODE CONNECTOR

Steven Feldman, Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 5, 1980, Ser. No. 204,107
Int. Cl.³ H01R *9/10*
U.S. Cl. 339—112 R **10 Claims**



1. A connector for terminating an in-line electrical device such as a diode having a pair of opposed leads protruding therefrom to a pair of external wires comprising:

a base having a central compartment which receives said device and a pair of opposed cylindrical compartments on either side thereof located closely thereto, said base further having a pair of opposed inner slots between said central compartment and cylindrical compartments, said inner slots being profiled to permit insertion of said leads, said base further having entries on opposite sides of said cylindrical compartments from said inner slots, said entries each being profiled to permit insertion of one of said external wires,

a pair of threaded cylindrical metal posts each mounted in a respective cylindrical compartment, each post having a diametric slot extending axially into the top thereof, said slots being aligned with respective inner slots and entries on either side tl:ereof,

a pair of hollow internally threaded cylindrical metal cap members, said caps being profiled to thread onto said posts, said caps being closely received in respective cylindrical compartments, whereby,

a device placed in said central compartment with said opposed leads extending through said inner slots and into said diametric slots in said posts and terminated to said external wires passing through said entries and into said diametric slots by screwing said caps onto said posts to secure said wires and leads therein will provide a short thermal path from said device to said posts

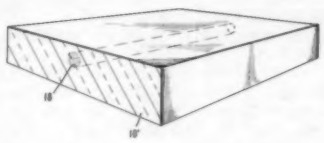
and caps, which act as heat sinks, and heat will be dissipated by conduction through said external wires and through said caps to said base.

4,375,312

GRADED INDEX WAVEGUIDE STRUCTURE AND PROCESS FOR FORMING SAME

Gregory L. Tangonan, Oxnard, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 7, 1980, Ser. No. 175,998
Int. Cl.³ G02B 5/174
U.S. Cl. 350—96.12 11 Claims



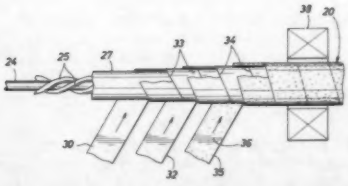
9. A graded index waveguide structure formed by:
(a) providing a substrate of fused quartz having a refractive index of about 1.47;
(b) forming a patterned layer of germanium oxide (GeO_2) having a refractive index of about 1.7 on one surface of said substrate, said pattern being formed in a predetermined geometry and to a thickness in the range of 5 to 10 micrometers;
(c) forming a layer of silicon dioxide (SiO_2) on said patterned layer of said GeO_2 and on said surface of said substrate to a thickness of approximately 100 micrometers, said SiO_2 having a refractive index of about 1.47; and
(d) heating said substrate with said patterned layer of said GeO_2 and said layer of said SiO_2 deposited thereon to a temperature of approximately 1400° C. for a period of approximately 5 hours to diffuse said GeO_2 into said substrate and into said layer of said SiO_2 and to thereby form said graded index waveguide structure.

4,375,313

FIBER OPTIC CABLE AND CORE

Ronald A. Anderson, and Robert M. Shapiro, both of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 22, 1980, Ser. No. 189,971
Int. Cl.³ G02B 5/14, 5/16
U.S. Cl. 350—96.23 13 Claims



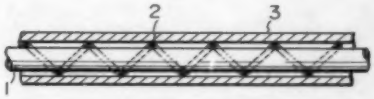
1. A fiber optic core for a logging cable, comprising:
(a) at least one optical fiber,
(b) a cushioning core,
(c) each said optical fiber being wrapped in a helical spiral about said cushioning core,
(d) soft, elastomeric cushioning means including a blanket surrounding said cushioning core and optical fibers for protecting each said fiber from point stresses and for transmitting forces thereto essentially hydrostatically,
(e) a first closely and spirally wound tape jacket forming a first layer surrounding said cushioning means, and
(f) at least one additional closely and spirally wound tape jacket forming another layer, each subsequent tape layer tightly surrounding the preceding layer and being wound in the same direction to overlap the spiral cuts of the preceding layer and cooperate therewith to buffer said optical fiber from point stresses and other forces within a logging cable and to form a barrier against the entry of moisture into said cushioning means and fiber.

4,375,314

INFRARED OPTICAL FIBER

Shiro Sakuragi; Kyoshiro Imagawa, and Mitsunori Saito, all of Kyoto, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Jan. 14, 1981, Ser. No. 225,001
Claims priority, application Japan, Jan. 22, 1980, 55-5317
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.23 5 Claims



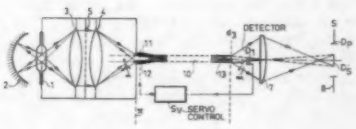
1. An infrared optical fiber comprising a core for transmitting infrared light; a cladding being preassembled around said core with radial clearance in a coiled configuration and then tensioned to radially constrict the cladding into coiled engagement with the core; and a protective tube which jackets said core and said cladding coiled thereon.

4,375,315

ARC LAMP ILLUMINATOR

Michel Lacombat, and Georges Dubroeucq, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 21, 1980, Ser. No. 142,471
Claims priority, application France, Apr. 23, 1979, 79 10210
Int. Cl.³ G02B 5/17
U.S. Cl. 350—96.25 6 Claims



1. An arc illuminator forming a radiant energy source comprising:
an arc lamp;
at least a first and second condenser lens and a filter positioned between said first and second lenses forming in an image plane of said source a real image thereof on the basis of the radiation from the arc lamp, said image having two zones of maximum intensity;
an optical fiber bundle; and
an intermediate lens placed at the fiber bundle exit, whose exit face is such that its image by said intermediate lens produces an illumination having a given degree of spatial coherence for a given utilization device, the fibers of the bundle being assembled in the entrance face placed in the image plane of the source in a first and second separate bundle having planar ends which intercept the radiation in the image plane of said source, the ends of said first and

second separate bundles being aligned with the two maximum intensity zones in the image plane of the source and being of substantially equal diameter.

4,375,316

FORWARD VIEW MIRROR FOR BICYCLES

Allan D. Le Vantine, 18225 Rancho St., Tarzana, Calif. 91356

Filed Feb. 24, 1981, Ser. No. 237,592
Int. Cl.³ G02B 7/18
U.S. Cl. 350—302 **7 Claims**

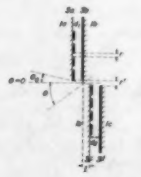
1. The combination of a bicycle having handlebars, of: a forward viewing optical arrangement having a first forwardly and downwardly facing plane mirror, a second plane mirror spaced apart from the first plane mirror, at a location foward and below the first plane mirror, so as to receive the reflected image from the first plane mirror, said second plane mirror facing rearwardly and upwardly so that the reflected image of the first plane mirror will be directed upwardly toward the eyes of the bicycle rider who is looking in a downward direction, said plane mirrors being mounted in a case means having mounting means which affix the case means to the handlebars, said case means having an angular adjustment means about a horizontal axis transverse to the forward direction of the bicycle, said first plane mirror being rigidly affixed to said case means, and said second plane mirror having an angular adjustment means within the case means about an axis parallel to the case means angular adjustment axis, said angular adjustments to accomodate the viewing requirements of the bicycle rider.

4,375,317

MULTI-LAYERED LIQUID CRYSTAL DISPLAY PANEL

Fumiaki Funada, Yamatokoriyama; Keisaku Nonomura, Nara; Hisashi Uede, Yamatokoriyama, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 15, 1979, Ser. No. 94,549
Claims priority, application Japan, Nov. 16, 1978, 53-141982; Feb. 16, 1979, 54-17521; Apr. 3, 1979, 54-40646
Int. Cl.³ G02F 1/133
U.S. Cl. 350—335 **5 Claims**



5. A matrix liquid crystal display having a substantially planar display area and an intended viewing position $\theta°$ from a line normal to said planar display in a viewing direction along said planar display area where θ is greater than 0, said display comprising:

at least two liquid crystal display layers, each of said liquid crystal display layers including,

a plurality of X electrodes aligned at given spaced intervals in a first direction,

a plurality of Y electrodes aligned at given spaced intervals in a second direction normal to said first direction, and

a layer of liquid crystal material disposed between said plurality of X electrodes and said plurality of Y electrodes,

said plurality of X electrodes and said plurality of Y electrodes overlapping to form electric field responsive operating regions arranged in rows;

said liquid crystal display layers being stacked so that said electric field operating regions of the respective liquid crystal display layers do not substantially overlap so that they may be viewed as a single display area;

said liquid crystal display layers each having an edge row of electric field operating regions adjacent the electric field operating regions of an adjacent stacked liquid crystal display layer;

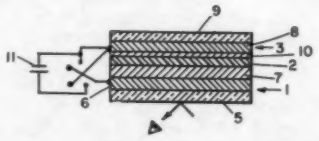
the distance between adjacent electric field operating edge rows as perceived from said intended viewing position being greater than zero and less than or equal to the distance between adjacent rows of electric field operating regions within the same row.

4,375,318

ELECTROCHROMIC CELLS WITH IMPROVED ELECTROLYTE SYSTEM

Robert D. Giglia, Rye, N.Y., and Sun Y. Huang, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 70,753, Aug. 30, 1979, Pat. No. 4,335,938. This application Jul. 30, 1980, Ser. No. 173,783
The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.
Int. Cl.³ G02F 1/17
U.S. Cl. 350—357 **5 Claims**



1. In an electrochromic device comprising a polymeric current-carrier-permeable layer in ion-conductive contact with a layer of persistent electrochromic inorganic oxide with both of said layers disposed between electrode layers and means for alternately applying electric fields of opposite polarity across said electrodes for changing the coloration in said electrochromic layer, the improvement wherein said current-carrier-permeable layer comprises a layer of polymeric electrolyte consisting of poly(2-acrylamido-2-methylpropanesulfonic acid) homopolymer and with an added organic humectant.

4,375,319

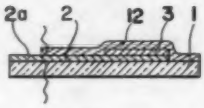
ELECTROCHROMIC DISPLAY DEVICE

Tomio Wada, Nara; Hisashi Uede, Yamatokoriyama; Sadatoshi Takechi, Nara, and Kohzo Yano, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 832,959, Sep. 13, 1977, abandoned. This application Jun. 26, 1981, Ser. No. 277,656
Claims priority, application Japan, Sep. 14, 1976, 51-110470
Int. Cl.³ G02F 1/17
U.S. Cl. 350—357 **17 Claims**

1. A display electrode portion of an electrochromic display device comprising a display portion and including a substrate,

a transparent conductive film formed on at least a portion of said substrate, an electrochromic film made of an electrochromic material and formed on at least a portion of said conductive film so that the transparent conductive film comprises a portion thereof contacted by the electrochromic material and a portion thereof forming a lead extension for connection to an external circuit, on which the electrochromic material is not formed, and a layer of insulating material covering both the conductive film of the lead extension and the electrochromic



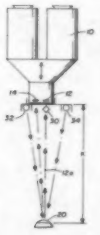
material, said layer of insulating material physically isolating the display portion from an electrolyte and acting as an insulator with respect to electrons but permitting passage of ions between the electrolyte, the electrochromic film, and the transparent conductive film of the lead extension, whereby colored display of the electrochromic film may be effected but the flow of the electrons from the transparent conductive film of the lead extension into the electrolyte are prevented so that the transparent conductive film of the lead extension is protected by said layer of insulating material.

4,375,320

DUAL IMAGE CORNEAL RADIUS MEASUREMENT

Heinz J. Smirmaul, 1207 Spring Lake Dr., Duncanville, Tex. 75116

Filed Sep. 5, 1980, Ser. No. 183,748
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—212 **8 Claims**



1. In an optical instrument employing a microscope adapted to bring into focus the cornea of a patient's eye to provide a reference distance in connection with the measurement of the radius of curvature of said cornea, the combination which comprises:

(a) a pair of parallel spaced apart linear objects in a plane perpendicular to the optical axis of the eye and of said microscope;

(b) a rod of refractile transparent material mounted in the field of view of said microscope with a diagonal of the cross-section thereof common to the optical axis of said microscope;

(c) means for rotating said rod around the optical axis of said microscope to produce a parallel line offset-overlap pattern of said objects as viewed through said rod; and

(d) means for measuring the angle between:

(i) a perpendicular from the long axes of said objects; and

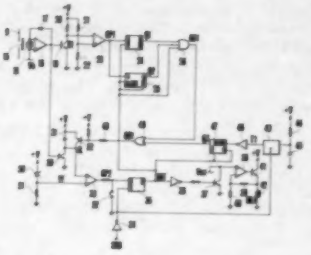
(ii) the orientation of said rod at which said pattern is produced.

4,375,321

EXPOSURE AMOUNT CONTROL DEVICE

Ryoichi Suzuki, Kawasaki; Ryuji Tokuda, Tokyo, and Michio Hirohata, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,044
Claims priority, application Japan, Feb. 8, 1980, 55-15092
Int. Cl.³ G03B *7/083, 7/093*
U.S. Cl. 354—23 D **11 Claims**



1. An exposure control device arranged so that an amount of light incident through an auxiliary opening is measured to control exposure through a principal opening formed by a set of movable shutter blades, the auxiliary opening having a predetermined aperture before a shutter release and being arranged to open in corresponding relation with the opening movement of the shutter blades and after the auxiliary opening has fully closed, comprising:

light measuring means for measuring the incident light through the auxiliary opening;

a time determining circuit responsive to an amount of light measured by the light measuring means for determining an exposure time and for producing as its output a closing signal to start a closing movement of the shutter blades;

timer means for starting an action when the opening movement of the shutter blades is started by the shutter release and for producing as its output a count start signal when a length of time necessary for the auxiliary opening to become fully closed from a pre-open state has ended; and

switching means for starting operation of the time determining circuit in response to the count start signal.

4,375,322

FULL RANGE VARIABLE PROPORTIONAL FILL FLASH SYSTEM

Richard J. Coppa, Westwood, and Marie T. Rodriguez, Somerville, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 11, 1981, Ser. No. 262,501
Int. Cl.³ G03B *7/14, 3/00*
U.S. Cl. 354—27 **20 Claims**

13. A photographic camera apparatus for use with a source of artificial illumination comprising:

means responsive to the determination of the camera-to-subject distance for providing an output response corresponding to the determined camera-to-subject distance;

a shutter blade mechanism;

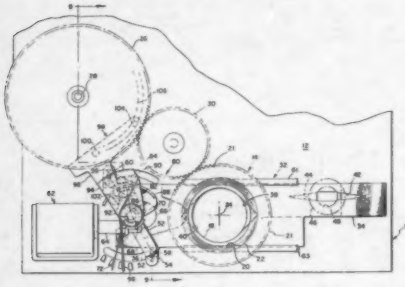
means for mounting the shutter blade mechanism for displacement between at least one arrangement wherein it blocks scene light from reaching a focal plane and another arrangement wherein it defines a maximum size aperture, said blade mechanism defining a range of progressively increasing sized apertures for admitting scene light to the focal plane as it moves from its scene light blocking arrangement to its maximum aperture defining arrangement;

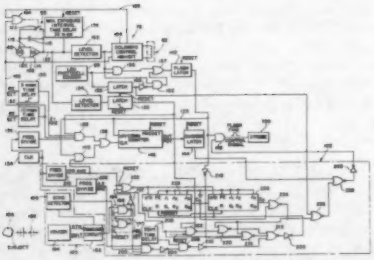
means for detecting the ambient scene light intensity prior to an exposure interval and for providing an output signal in response to the ambient scene light so detected, said de-

tecting means also operating to detect scene light during an exposure interval in correspondence with the scene light admitted by said blade mechanism to provide an assertive output signal upon the detection of a select amount of scene light corresponding to a select exposure value;

selectively actuatable drive means for driving said shutter blade mechanism from its scene light blocking arrangement to its scene light unblocking arrangement and for thereafter returning said shutter blade mechanism to its scene light blocking arrangement to terminate the exposure interval in response to the assertive output signal from said scene light detecting means;

means for providing a signal for igniting the source of artificial illumination at the aperture defined by the blade mechanism when the aperture size corresponds to the camera-to-subject distance or, alternatively, at the aperture size





defined by the blade mechanism upon receipt of said assertive output signal from said scene light detecting means when such aperture size is less than the aperture size corresponding to the camera-to-subject distance; and

artificial illumination control means for controlling the amount of artificial illumination as a function solely of said output signal from said ambient scene light detecting means prior to the exposure interval when the source of artificial illumination is ignited at the aperture size corresponding to the camera-to-subject distance or, alternatively, for controlling the amount of artificial illumination as a function of both said output response which corresponds to said determined camera-to-subject distance and said output signal from said ambient scene light detecting means prior to the exposure interval when the source of artificial illumination is ignited at the aperture size defined by said blade mechanism upon receipt of said assertive output signal from said scene light detecting means.

4,375,323

WATERPROOF HOUSING FOR CAMERA

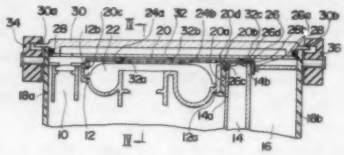
Tetsuhiko Inagaki; Takashi Iwata, both of Sakai; Tetsuro Oya, Osaka, and Toshinori Imura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 91,237, Nov. 5, 1979, abandoned. This application Aug. 25, 1981, Ser. No. 295,981

Claims priority, application Japan, Nov. 14, 1978, 53-140326

Int. Cl.³ G03B *17/08*

U.S. Cl. 354—64 **21 Claims**



16. A waterproof camera comprising: a camera body case immediately housing a camera mechanism, said case having an opening and a film chamber accessible through said opening;

a lid member separably intercoupled to said case;

a resilient packing enclosing said opening, said resilient packing positioned between said case and lid member; and

an auxilliary lid member for opening and closing said film chamber.

4,375,324

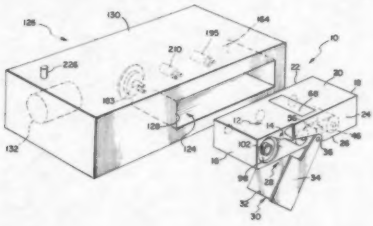
DISPOSABLE PROCESSING KIT CONTAINING FILM

William A. Holmes, Marbelhead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 28, 1981, Ser. No. 305,961

Int. Cl.³ G03D *5/06*

U.S. Cl. 354—303 **8 Claims**



1. A disposable kit configured to be placed in a film processor wherein it is adapted for use in the processing of a photographically exposed roll of instant-type transparency film contained within the kit, said kit comprising:

a housing defining a chamber for receiving components of said kit, said housing including means for providing access to said chamber;

first means mounted within said chamber for rotatably supporting a roll of flexible sheet material;

a length of flexible sheet material having first and second ends, said sheet material being wound about said first means with said first end attached thereto;

a film assemblage of the type adapted for use in a conventional 35 mm camera mounted within said chamber, said film assemblage including a film cassette having an exit slot therein, a film spool, and a length of unexposed photographic film of the instant transparency type wound about said spool with a first end attached to said spool and a second end thereof extending to the outside of said film cassette via said film exit slot, said film cassette being adapted to be removed from said chamber and placed in a

camera wherein said film is adapted to be withdrawn from said film cassette, exposed, and rewound into said film cassette, whereupon said film cassette with said exposed film may be removed from the camera and returned to said chamber;

second means rotatably mounted within said chamber, said second means having means adaptable to receive said second ends of said exposed film and said sheet material;

an applicator adapted to apply a layer of processing liquid to one side of either said exposed film or said sheet material; and

means coupled to said second means and adapted to be driven by a drive means of a film processor in a direction so as to wind a laminate comprised of said exposed film and said sheet material with a layer of processing liquid located therebetween upon said second means for a period of time sufficient to initiate the formation of visible images within said laminate.

4,375,325

MACHINE FOR DEVELOPMENT OF EXPOSED PICTURES

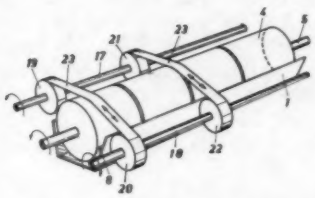
Olov Eng, Pl. 8362, Boras, Sweden (505 90)

PCT No. PCT/SE79/00169, § 371 Date Apr. 9, 1981, § 102(e) Date Apr. 9, 1981, PCT Pub. No. WO81/00465, PCT Pub. Date Feb. 19, 1981

PCT Filed Aug. 10, 1979, Ser. No. 252,444

Int. Cl.³ G03D *5/06*

U.S. Cl. 354—318 **3 Claims**



1. In a machine for developing picture material of the type wherein a cylindrical member is rotatably mounted on a drive shaft, means are provided to produce a liquid film on the outer surface of the cylindrical member, and further means are provided for positioning the picture material in contacting engagement with the liquid film on the outer surface of the cylindrical member, the improvement comprising an elongated tank, partition means to subdivide said tank in the longitudinal direction into a plurality of receptacles for different process liquids, a cylindrical member partially immersed in the liquid in each tank and rotatably mounted on a driven shaft about a substantially horizontal axis so that rotation of said cylindrical member produces a liquid film on the outer surface thereof, said cylindrical members being coaxially aligned in a continuous row, and conveying means for conveying the picture material into contacting engagement with said liquid film surface on said cylindrical members comprising two driven elongated conveyor shafts rotatably mounted adjacent the outer surface of said cylindrical members with their longitudinal axes of rotation in parallel with the rotational axis of said cylindrical member, picture material mounting means on said conveyor shafts to mount said picture material in continuous strip form so that said picture material can be transferred between said mounting means with one surface thereof in contacting engagement with said liquid film surface on a cylindrical member, and said mounting means being movable axially along said conveyor shafts so that said strip-form picture material can be transferred from one cylindrical member to another to successively treat it with said different process liquids in said receptacles.

4,375,326

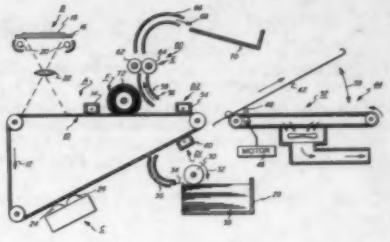
DUPLEX REPRODUCING MACHINE

Joseph H. Lang, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 8, 1981, Ser. No. 271,738

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **8 Claims**



1. A reproducing machine for forming successive images on opposed sides of a copy sheet to produce a duplex copy comprising:

a member arranged to have a first image and a second image recorded thereon, said member driven to move through a first plane through a first transfer zone and then change direction to move through a second plane through a second transfer zone;

a tray pivotably mounted near said member and having a surface for receiving said copy sheet;

drive means for moving said copy sheet away from said tray along said second plane; said drive means having a number of spaced belts moving in said second plane to engage said copy sheet; and

means for pivoting said tray to a first position where said surface is co-incident with said first plane for receipt of a copy sheet as said member moves said sheet past the first transfer zone and away from said member as said member changes directions, said means for pivoting also operative to pivot said tray to a second position where said copy sheet engages said spaced belts thereby advancing said sheet through said second plane to said member and said second transfer zone.

4,375,327

ROLLER FIXING DEVICE

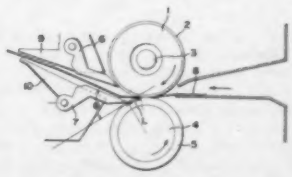
Kenichi Matsumoto, Tokyo; Hiroaki Ura, Kunitachi; Tamio Ogino, and Junichi Koiso, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Inc., Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 328,919

Claims priority, application Japan, Dec. 22, 1980, 55-182277

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 FU **12 Claims**



1. In a roller fixing device comprising a roller, a pressure roller which contacts under pressure therewith, and claw members positioned at the rear of said pair of rollers and each arranged so as to contact under pressure with the surface of

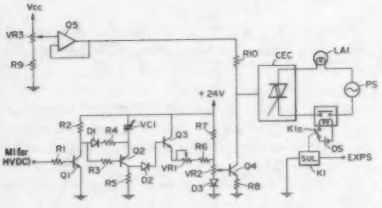
each of said pair of rollers, respectively, the improvement wherein said claw member facing said pressure roller is arranged so that the distance between the contact point of said rollers of said pair and the top end portion of said claw member be within 6.5 mm on the pressure roller periphery and an angle between a tangential line of the pressure roller at a point where said top end portion of said claw member contacts under pressure with said pressure roller and the upper edge of said claw member be at least 45 degrees.

4,375,328

ELECTROPHOTOGRAPHIC DEVICE WITH LIGHT QUANTITY CONTROL

Hiroaki Tsuchiya, Tokyo, and Yasuhide Kurosaki, Mitaka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,215
Claims priority, application Japan, May 17, 1979, 54-60785
Int. Cl.³ G03G *15/04*
U.S. Cl. 355—14 E **22 Claims**



1. An electrophotographic device, comprising:

(a) light irradiating means to irradiate light on a photosensitive member having certain sensitivity characteristics;

(b) charging means to uniformly charge said photosensitive member after the light irradiation by said light irradiating means;

(c) light image projecting means to project a light image after the charging by said charging means, thereby forming an electrostatic latent image corresponding to said light image on said photosensitive member;

(d) developing means to develop said electrostatic latent image; and

(e) control means to vary the irradiated light quantity by said light irradiating means and the exposure light quantity by said light image projecting means with lapse of a lighting time in said light source so that the sensitivity characteristics of said photosensitive medium are compensated for variations in said lapse of lighting time.

4,375,329

TALKING COPIERS AND DUPLICATORS

Kenneth K. Park, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

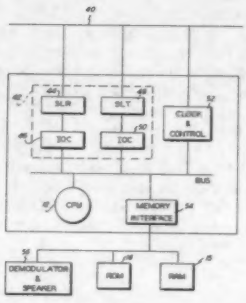
Filed Jun. 9, 1980, Ser. No. 157,716
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 C **1 Claim**

1. In a reproduction machine for producing impressions of an original, the reproduction machine having a photosensitive member and a plurality of discrete operating components including a fuser, a developer, and a copy paper feeder cooperable with one another and the photosensitive member to electrostatically produce the impressions on the copy paper, the reproduction machine including a paper path sensor, a fuser control sensor and a development control sensor, the improvement comprising,

a machine controller including a master controller, a shared communication channel, shared logic receive and transmit circuitry,

a speaker and associated amplifier,

a speech communication module including a microprocessor, a memory, a continuous variable slope delta demodulator, and a converter and filter interconnecting the communication module to the speaker amplifier, the shared



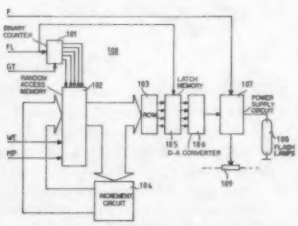
logic receive and transmit circuitry interconnecting the master control and the microprocessor, the speech communication module responding to sensed machine conditions to provide an audio response through the speaker.

4,375,330

CONTROL CIRCUIT IN AN ELECTROPHOTOGRAPHIC COPYING MACHINE

Petrus J. M. Ophey, Grubbenvorst, Netherlands, assignor to Oce-Nederland B.V., Venlo, Netherlands

Filed Dec. 11, 1980, Ser. No. 215,147
Claims priority, application Netherlands, Dec. 18, 1979, 7909098
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **6 Claims**

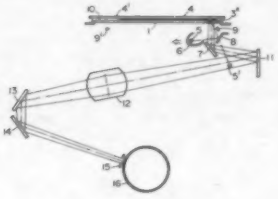


1. In an electrophotographic copying machine comprising a plurality of processing stations and a photoconductive element movable past said stations for making copies, wherein electrophotographic properties of said element change predictably as a function of the number of copies made by its use, and means for adjusting one or more of the processing stations to suit properties of said element, a control system comprising a said photoconductive element divided relative to a reference point into a plurality of imaging sections each of which is usable for copy formation, counter means comprising a plurality of counting elements, including one for each of said imaging sections, which respectively count the number of copies made by use of the corresponding imaging sections, circuit means for registering the position of said photoconductive element relative to one or more of said processing stations, and means connecting said adjusting means with said counter means and said registering circuit means and operative while said processing stations are acting on any one of said imaging sections to adjust one or more of said stations in accordance with the count by a said counting element of the number of copies made by use of the particular imaging section.

4,375,331
SLIT EXPOSURE DEVICE WITH WHITE REFLECTING MEMBER

Yoshikuni Tohyama, and Akihiko Katsura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1980, Ser. No. 156,219
Claims priority, application Japan, Jun. 7, 1979, 54-71741
Int. Cl.³ G03B 15/02, 27/54
U.S. Cl. 355—51 11 Claims

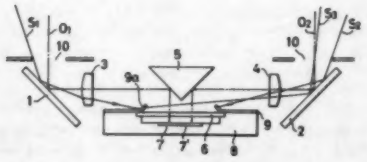


1. An original exposure device comprising:
an original carriage for supporting an original;
an original stopping reference member provided at one end of said original carriage;
a slit exposure scanning system for illuminating a slit area on an original, said illuminating system having a light source and an auxiliary mirror opposed to said light source with the image forming main optical path from said slit area interposed therebetween, said scanning system being movable relative to said original carriage; and
a white member fixedly disposed in the image forming main optical path at a boundary portion between said original stopping reference member and one end of the original, said white member being disposed substantially in parallel with a light beam projected from said light source and reflected by said auxiliary mirror toward said slit area, and being adapted to intercept the image forming light beam from said boundary portion and effectively direct part of the illuminating light beam of said slit exposure scanning illuminating system to an image plane.

4,375,332
ANTI-GHOST DEVICE FOR OPTICAL DISTANCE MEASURING SYSTEM

Hideo Yokota, Tokyo, and Kazuya Hosoe, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 77,725, Sep. 21, 1979, abandoned. This application Jul. 7, 1981, Ser. No. 281,286
Int. Cl.³ G01C 3/08
U.S. Cl. 356—1 7 Claims

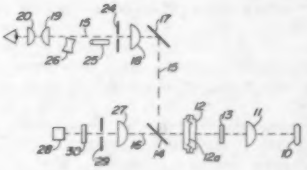


1. An optical distance measuring system comprising:
first and second electro-optical arrays positioned adjacent each other; a prism having a pair of reflecting faces angular to each other and forming a bisecting plane transverse to the arrays and between the arrays;
a pair of lenses positioned along an optical axis transverse to the bisecting plane on opposite sides of the bisecting plane;
a plane of mirrors for collecting light along directions substantially transverse to the optical axis and positioned on opposite sides of the respective lenses so as to direct light through the lenses to the faces of said prism for reflecting toward said arrays;
said arrays being spaced closer to said faces than said lenses; and
a pair of opaque elements on opposite sides of the plane having first portions extending parallel to the arrays and transverse to said plane and having angular extensions projecting toward said faces so as to block light from said lenses toward said arrays.

4,375,333
MICROPROCESSOR DIRECTED OPTICAL PYROMETER

Alexander H. Clark, Norristown; John E. O'Neil, Blue Bell, and Albert S. Tenney, III, North Wales, all of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Oct. 16, 1980, Ser. No. 197,453
Int. Cl.³ G01J 5/56
U.S. Cl. 356—47 5 Claims



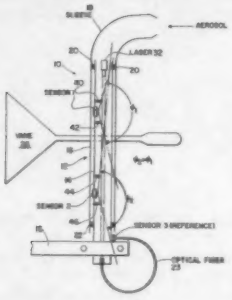
1. A microprocessor directed disappearing filament pyrometer for measuring and displaying the temperature of a target area including
a calibrated lamp having a linear filament;
a solid state photoelectric detector array having a multiplicity of sensitive areas in a linear array, arranged in a substantially right angle relationship with respect to said linear filament of said calibrated lamp;
means for continuously directing radiation from said linear filament of said calibrated lamp upon a first group of said sensitive areas and for continuously directing radiation from said target area upon a second group of said sensitive areas with a portion of said second group of sensitive areas being located on each side of said sensitive areas of said first group;
means for scanning said groups of said sensitive areas for producing an output signal having a first data level dependent upon the intensity of radiation on said first group of sensitive areas and a second data level dependent upon the intensity of radiation on said second group of sensitive areas;
means responsive to said output signal for producing a signal representative of the desired current flow through said linear filament of said calibrated lamp so that said first data level and said second data level of said output signal will be the same;
means responsive to said desired current signal for adjusting said current flow through said linear filament of said calibrated lamp to said desired current; and
indicating means responsive to said signal representative of said desired current flow for producing an indication of said temperature of said target area.

4,375,334

NEPHELOMETER

Hermann E. Gerber, Reston, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 18, 1981, Ser. No. 274,958
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **5 Claims**



1. A nephelometer for monitoring optical quality of a marine atmosphere comprising:

a housing including an elongate chamber for containing a sampling of marine atmosphere including aerosol particles;

a laser providing pulses of collimated electromagnetic radiation through the sampling longitudinally of the elongate chamber;

plural cosine sensors in the chamber longitudinally spaced along the radiated sampling and looking generally transverse to the elongate chamber;

means admitting scattered radiation to one of the sensors over an angular range from about 170° downstream to about 13° upstream of the radiation, and to the other sensor over an angular range from about 170° downstream to about 3° upstream of the radiation whereby said other sensor receives more forward radiation than the one;

a third sensor receiving radiation from the laser through the sampling for monitoring laser output intensity and producing a reference signal in response thereto;

said pair of sensors providing respective output signals in relation to the intensity of scattered radiation received by each over its entire angular ranges; and,

means comparing the sensor output signals and reference signal;

thereby providing scattered radiation information.

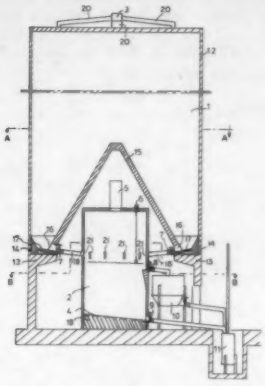
4,375,335

SILO COMBINATION FOR MIXING STORED MATERIAL

Heinrich Klein-Albenhausen, Amsinckstrasse 45 2000, Hamburg 1, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,618
Int. Cl.³ B01F *15/02*; B28C *5/00*; B67D *5/08*
U.S. Cl. 366—15 **17 Claims**

1. A silo for finely mixng material stored therein, comprising: mixing silo means for containing layered material; a plurality of first means for conveying material out of the mixing silo means; a plurality of second means, each of the second means corresponding to one of said first means and comprising a bulk material valve positioned along said corresponding first means to selectively open and close said corresponding first means and aerating means for injecting air into the mixing silo means adjacent said corresponding first means, for coarsely mixing material by intermixing layers as material is transferred out of the mixing silo means; and homogenizing silo means communicating with the first means for containing the coarsely mixed



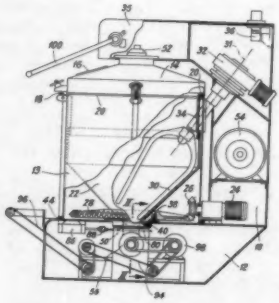
material until it is finely mixed, said homogenizing silo means having a plurality of aerating elements in the bottom thereof.

4,375,336

MACHINE FOR DISPENSING A DOUGHY SUBSTANCE

Louis E. A. Halley, 62 bis route de Duclair, Canteleu, Seine-Maritime, France

Filed Oct. 1, 1980, Ser. No. 192,807
Claims priority, application France, Oct. 3, 1979, 79 25024; Apr. 18, 1980, 80 08955; Jun. 30, 1980, 80 14698
Int. Cl.³ B01F *7/04*; A21C *1/04*
U.S. Cl. 366—77 **10 Claims**



1. A combined mechanical kneading and leaktight doughy substance weighing and delivering machine, comprising:

(a) an open top rotary kneading vat, rotatably mounted about a substantially vertical axis;

(b) first drive means to rotate said kneading vat;

(c) a kneading arm, rotatably mounted about an inclined axis with respect to said kneading vat substantially vertical rotation axis, and the lower portion of which is received in said kneading vat;

(d) second drive means to rotate said kneading arm;

(e) a substantially vertical open-top fixed vat, within which said kneading vat is rotatably mounted;

(f) a removable cover, for allowing ingredients to knead to be charged into said kneading vat, and cooperating with tightening and sealing means carried by an upper part of said fixed vat, for leaktight closing said fixed vat;

(g) said fixed vat being provided with a compressed gas inlet

for pressurizing the inside of said fixed vat when the latter is closed;

(h) said rotary kneading vat presenting at its base a central dispensing orifice formed by a channel projecting axially through a lower part of said fixed vat, for dispensing doughy substance when said fixed vat is pressurized;

(i) a substantially flat blocking member having an upper face adjacent with small clearance to the lower part of said channel, said blocking member having an orifice and slidingly movable between two extreme positions, in one of which said blocking member orifice is aligned with said dispensing orifice for allowing the passage of doughy substance and in the other of which said blocking member shuts said dispensing orifice;

(j) a weighing rotor rotating about a revolution axis perpendicular to said kneading vat vertical rotation axis and having an external surface of revolution, an adaptor interposed between said blocking member and said rotor, the under face of said blocking member being adjacent with small clearance to the upper face of a hollow substantially cylindrical part of said adaptor, said substantially cylindrical part of said adaptor forming an extension of

said channel, a cavity formed in said rotor and emerging in said surface of revolution to define an opening which upon rotation of said weighing rotor comes into a position of alignment with an outlet defined by the lower face of said substantially cylindrical part of said adaptor, which lower face is delimited by a surface of revolution corresponding to said external surface of revolution of said rotor with small space separating said surfaces for having said cavity filled with doughy substance through said outlet and said dispensing orifice when said blocking member orifice is aligned with the latter, and for so preparing lumps of doughy substance of determined mass and volume;

(k) a delivering conveyor circulating underneath said weighing rotor, for receiving said lumps of doughy substance released from said cavity on further rotation of said weighing rotor and activation of lumps pneumatic ejection means opening in the bottom of said cavity and provided in said weighing rotor; and

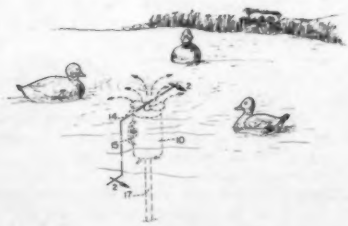
(l) control means for controlling said pneumatic ejection means in synchronization with third drive means for driving said weighing rotor and said delivering conveyor.

4,375,337

UNDERWATER DEVICE FOR RUFFLING STILL WATER

Joseph W. Yerger, 1403 Johnson St., P.O. Box 709, Tallulah, La. 71282

Filed Mar. 24, 1981, Ser. No. 247,217
Int. Cl.³ B01F *13/00*; E04H *3/18*
U.S. Cl. 366—343 **3 Claims**



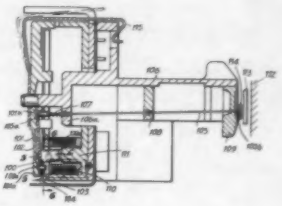
1. A means whereby still water is caused to have ripples on the surface to simulate waterfowl swimming, comprising a waterproof housing containing a battery, an electric motor connected to and powered by the battery and causing to rotate a rotatable shaft, a propeller connected to the rotatable shaft, a watertight seal around the shaft at the top of the housing, an electrical circuit connecting the motor and battery with an on-off switch mounted such that it is accessible from outside the housing, a watertight threaded screw-on removable bottom for the housing, and a means of positioning the motor assembly a distance below the surface of the water such that ripples simulating the appearance of motion of waterfowl swimming on the surface are created without causing either an audible or a visual signal that would alarm incoming waterfowl in flight, such positioning means comprising a stake of adjustable length attached to the bottom of the housing.

4,375,338

WIRE DOT PRINT HEAD

Akio Mitsuishi, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano, both of, Japan

Filed Jul. 15, 1980, Ser. No. 169,069
Claims priority, application Japan, Jul. 16, 1979, 54-98501[U]; Jul. 17, 1979, 54-90736
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **8 Claims**



1. A wire dot print head comprising:

a print head nose having a hollow core;

a plurality of print wires slideably mounted in said core;

a plurality of selectively operable electromagnetic means disposed about said core;

operating means operatively coupled between said print wires and said electromagnetic means adapted for pivotable displacement by said electromagnetic means for selectively displacing said print wires between a first at rest position and a second print position;

holding means mounted on said operating means for supporting said operating means in position adjacent said electromagnetic means; and

securing means for holding said holding means in position for maintaining the position of said operating means between said holding means and said electromagnetic means and said nose, wherein said securing means is a securing spring having a central region and outwardly extending arms for engaging said nose for securing said holding means against said operating means and said electromagnetic means.

4,375,339

ELECTRICALLY CONDUCTIVE RIBBON BREAK DETECTOR FOR PRINTERS

Stanley Dyer; James J. Molloy, and Donald A. Walker, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1980, Ser. No. 211,886
Int. Cl.³ B41J *35/36*
U.S. Cl. 400—249 **14 Claims**

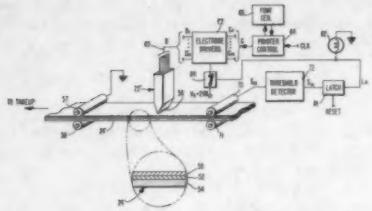
1. For use in a printer of the kind that includes a printhead with an associated printhead driver and utilizes an ink ribbon which is electrically conductive and advances relative to said printhead to establish a print zone at which current printing operations occur, a ribbon monitoring system comprising:

a signal means for applying an electrical signal to said rib-

bon, said signal means defining a detection circuit which is completed through a ribbon section including said print zone;

means for monitoring an electrical parameter of said detection circuit and for producing a signal in response to excursions of said parameter outside of a preselected range for normal operation; and

means responsive to said signal for disabling said printhead driver.



4,375,340

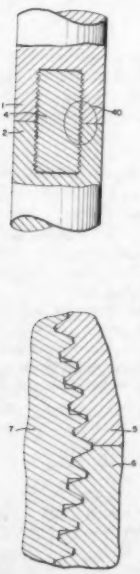
CARBON ELECTRODE JOINT

James M. Faircloth, Jr., Morganton, N.C., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Mar. 21, 1980, Ser. No. 132,633

Int. Cl.[3] **F16B** *12/36, 13/00, 7/18*

U.S. Cl. 403—296 **3 Claims**



1. In a carbon electrode joint comprising two coaxially aligned electrode sections, each said electrode section having a threaded socket in its butt face, and a correspondingly threaded nipple joining said electrode sections in abutting relationship, the improvement which comprises having an effective amount of material removed from the non-load bearing flank of the first few threads on each side of the center thread of the nipple, the removed material having the cross-sectional configuration of an obtuse triangle extending from the root diameter of the thread to a point about three-fourths of the distance to the crest of the thread and being equal to about one-sixth of the cross-sectional area of the whole thread, the amount of removed material being sufficient to increase electrode joint strength, the number of threads on each side of the center thread of the nipple affected by removal of material being from about 18% to about 36% of the total number of threads on a single side of said nipple's center thread.

4,375,341

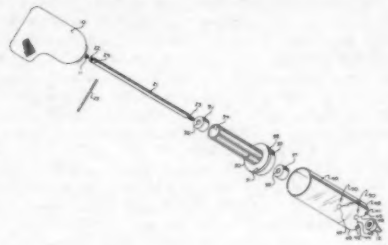
DRILLING ALIGNMENT TOOL

Herbert C. Schulze, P.O. Box 6070, Incline Village, Nev. 89450

Filed Jul. 5, 1978, Ser. No. 921,946

Int. Cl.[3] **B23B** *40/00*

U.S. Cl. 408—72 R **2 Claims**



1. A removable drilling and tapping centering tool for use with a drill having a drive shaft with a chuck and a bit mounted in the chuck, including:

(a) a tubular handle grip having upper and lower portions and a grip surface;

(b) a drive shaft bearing sleeve associated with said upper portion for supporting said drive shaft;

(c) a drive shaft bearing sleeve associated with said lower portion for supporting said drive shaft;

(d) said bearing sleeves being spaced from each other and axially aligned on the longitudinal axis of said tubular handle grip;

(e) said lower portion of said handle grip adjacent said lower bearing sleeve including an outwardly extending member projecting radially beyond said grip surface a substantial distance and having an outer periphery;

(f) a downwardly projecting thin walled alignment sleeve for encompassing said chuck connected and adjacent said outer periphery and extending downwardly a substantial distance therefrom and having a bottom edge portion;

(g) said alignment sleeve having work engaging means in said bottom edge portion having diametrically opposed substantially similar work receiving means;

(h) said alignment sleeve having its longitudinal axis coaxial with said handle grip longitudinal axis;

(i) said bearing sleeves having means for slideably moving said drive shaft on said handle grip longitudinal axis;

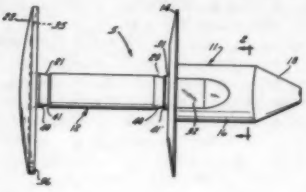
(j) the internal diameter of said alignment sleeve being substantially greater than the external diameter of said tubular handle grip for shrouding said chuck while maintaining said chuck in a spaced relationship with the thin wall of said alignment sleeve, and;

(k) said diametrically opposed work receiving means including means adapted for receiving various sizes of curved surface work pieces as well as various sizes of flat surface work pieces, and wherein said diametrically opposed work receiving means each include a first pair of substantially horizontal flat cooperating work positioning shoulders for receiving various sizes of flat surface work pieces and a second pair of angularly converging cooperating work positioning shoulders for receiving various sizes of curved surface work pieces.

4,375,342
TWO-PIECE PLASTIC FASTENER

Burnell J. Wollar, Barrington, Ill., and Richard J. Schwind, Akron, Okla., assignors to Phillips Plastic Corp., Phillips, Wis.

Continuation-in-part of Ser. No. 224,955, Jan. 14, 1981. This application Jun. 10, 1981, Ser. No. 272,114
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—41 **4 Claims**



1. A plastic fastener for removable insertion through aligned openings in a plurality of workpieces to secure the latter together, said fastener comprising:

a flexible resilient body having inner and outer ends, a plunger having inner and outer ends, and frangible means for detachably securing the inner end of said plunger to the outer end of said body in pre-assembled aligned position;

said body comprising a cylindrical body shank insertable through said openings, a concentric body head integrally connected to the outer end of said body shank and having an underside for abutting one of said workpieces and limiting insertion of said body into said aligned openings, and a tapered body portion integrally connected to the inner end of said body shank to facilitate insertion into said aligned openings;

said body having a central opening extending axially therethrough, that portion of said opening through said body head and in said body shank near said outer end of said body being cylindrical, that portion of said opening in said body shank near said inner end of said body being conical;

said body comprising slots extending axially inwardly from said inner end of said body to said underside of said body head and cooperating with those portions of said opening in said body shank to define a plurality of flexible legs which are laterally spaced apart from one another and swingable toward and away from the longitudinal axis of said body, each of said legs including an external surface which diverges outwardly when said leg is flexed radially outwardly to engage another of said workpieces to prevent withdrawal of said fastener from said aligned openings, each of said legs further including an internal surface which comprises a cylindrical recess and another recess which diverges inwardly, said recesses being defined by portions of said central opening;

said body comprising detent lugs integrally connected thereto securing said plunger in different axial positions relative to said body, each detent lug being located within and near the outer end of a slot between a pair of adjacent legs, each detent lug being flexibly swingable radially outwardly from one position to another position relative to said central opening, each detent lug comprising an end surface transverse to the longitudinal axis of the body member, an outer surface spaced inwardly from the outer surface of said body shank, and an inner surface that inclines inwardly into said central opening and toward the inner end of said body and intersects said end surface at an acute angle;

said plunger comprising a cylindrical plunger shank and a concentric outer plunger head integrally connected to the outer end of said plunger shank for disposition adjacent said one of said workpieces;

said plunger head being larger in diameter than said body head and provided on the underside thereof with a recess for receiving and concealing said body head;

said plunger shank being provided near its outer end with a first detent-engaging groove and near its inner end with a second detent-engaging groove, each groove extending entirely around said plunger shank, each groove having a V-shaped cross-sectional configuration with one surface that slopes toward the outer end of said plunger and with another surface that slopes toward the inner end of said plunger, said one surface defining a smaller angle than said other surface relative to the longitudinal axis of said plunger,

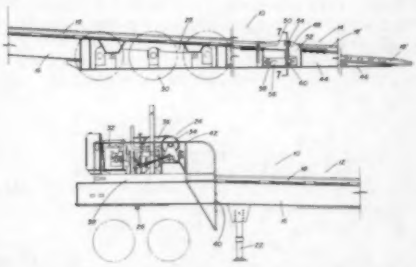
said plunger being axially movable, when said frangible means is broken, from said pre-assembled position into a preliminary assembled position wherein said plunger shank is inserted partially into said cylindrical portion of said opening and said detent lugs releasably engage said first detent-engaging groove,

said plunger being further axially movable from said preliminary assembled position into a finished assembled position wherein said plunger shank is inserted fully into said conical portion of said opening and said detent lugs releasably engage said second detent-engaging groove and said plunger shank effects radially outwardly diverging flexing of said legs.

4,375,343
RAILCAR TRANSPORTING TRAILER

William S. Butler, Burleson, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 25, 1980, Ser. No. 180,727
Int. Cl.³ B60P *1/22, 3/07;* **B61D** *47/00*
U.S. Cl. 414—508 **12 Claims**



1. A railcar transport for transporting a railcar from a first location where said railcar is located on a pair of rails to a second location and for use with a truck tractor towing vehicle, said railcar transport comprising:

elongated rectangular frame means including longitudinal side frame members having a pair of rails located thereon and a plurality of cross members located between the longitudinal side frame members being secured thereto, the elongated rectangular frame means adapted to transport said railcar from said first location to said second location;

engine means located on one end of the elongated rectangular frame means;

winch means located on one end of the elongated rectangular frame means, the winch means powered by the engine means and adapted to move said railcar from said first location onto the elongated rectangular frame means and from the elongated rectangular frame means to said second location;

tank means having a supply of fluid therein connected to hydraulic pump means powered by the engine means thereby supplying the fluid from the tank means under pressure, the hydraulic pump means and tank means being

located on one end of the elongated rectangular frame means,

kingpin means located on one end of the elongated rectangular frame means for releasably connecting the elongated rectangular frame means to said truck tractor towing vehicle;

trailer suspension means having wheels thereon secured to the elongated rectangular frame means;

railcar ramp means having a pair of rails thereon in juxtaposed relationship to the pair of rails on the elongated rectangular frame means, the railcar ramp means being pivotally mounted on the other end of the elongated rectangular frame means and adapted to provide a ramp upon which said railcar may be conveyed to and from the elongated rectangular frame means;

hinge means having a first portion secured to the other end of the elongated rectangular frame means, having a second portion secured to one end of the railcar ramp means and having pin means rotatably securing the first portion to the second portion, the hinge means adapted to allow rotation of the railcar ramp means relative to the elongated frame means to facilitate transport of said railcar from said first location to said second location after said railcar has been conveyed from said pair of rails on the ramp means to the elongated rectangular frame means by the winch means;

rail alignment means located on the other end of the railcar ramp means between the pair of rails thereon, the rail alignment means adapted to facilitate the alignment of the rails on the ramp means with said pair of rails at said first location by the lateral movement of the rails on the ramp means relative to said pair of rails upon actuation of the rail alignment means when said railcar transport is at said first location having the ramp means at least partially overlying said pair of rails; and

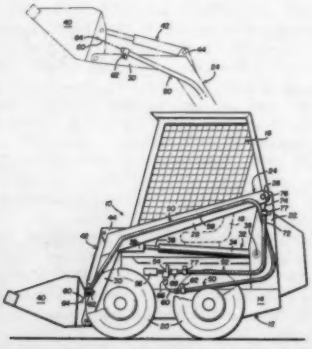
hydraulic cylinder means having one end thereof secured to the elongated rectangular frame means and the other end thereof secured to the railcar ramp means to rotate the railcar ramp means relative to the elongated rectangular frame means upon the actuation thereof by the application of the fluid under pressure from the hydraulic pump means.

4,375,344

BUCKET LEVELING MECHANISM

Dean O. Baum, and James E. Dawson, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jul. 2, 1981, Ser. No. 280,157
Int. Cl.³ E02F 3/00
U.S. Cl. 414—708 **6 Claims**



1. In a front end loader having an elongated body, a pair of lift arms pivotally connected at one end to said body, a bucket pivotally connected to the other end of said lift arms, a fluid tilt cylinder connected to said bucket for tilting said bucket about its pivotal connection with said lift arms, and a pair of fluid lift cylinders for moving said lift arms between lowered and raised positions, the improvement comprising:

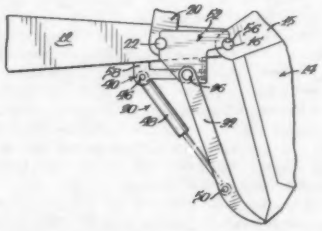
a bucket leveling mechanism that automatically operates said bucket tilt cylinder for pivoting said bucket so that the attitude of said bucket remains substantially constant as said lift arms are raised, said bucket leveling mechanism including a push-pull bucket cable assembly for sensing the rotation of said bucket and a push-pull lift arm cable assembly for sensing the pivotal movement of said lift arms, said bucket cable assembly being attached at one end to said bucket and at its other end to a movable block member that is operably connected to a control valve associated with said bucket tilt cylinder, one end of said lift arm cable assembly being attached to a lift arm and the other end of said lift arm cable assembly acting upon said block member in a direction perpendicular to the longitudinal axis of said block member, said block member including opposed sides with a first of the sides having a cam surface that engages a spool extending from said control valve and a second, opposite side that is acted upon by said other end of said lift arm cable assembly, said bucket cable assembly being attached to one end of said block member for moving said block member longitudinally within a space between said control valve spool and the other end of said lift arm cable assembly in response to rotation of said bucket, said lift arm cable assembly acting upon said second side of said block member when said lift arms are raised to a predetermined height where said bucket would normally roll back past a level position to push said block member cam surface against said control valve spool and thereby automatically actuate said bucket tilt cylinder for rotating said bucket to a level position.

4,375,345

CLAMPING ARM ASSEMBLY FOR A BACKHOE

Charles B. Hanson, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 23, 1981, Ser. No. 286,342
Int. Cl.³ B66F 9/00
U.S. Cl. 414—722 **12 Claims**



1. An improved detachable clamping arm assembly for use with an excavator having a dipper arm movable with respect to a ground-supported frame and a bucket pivotally supported on the distal end of said dipper arm for movement by a bucket fluid actuator, comprising:

an arm link adapted to abut the lower surface of said dipper arm in fixed relation thereto,

a clamping arm pivotally connected to said arm link for pivotal movement with respect thereto,

an arm fluid actuator having a first end pivotally connected to said arm link and spaced from the pivotal connection of said clamping arm to said arm link, and a second end pivotally connected to said clamping arm whereby selective actuation of said arm fluid actuator selectively pivots

said arm toward and away from engagement with said bucket for grasping objects, and

mounting means for detachably mounting said arm link in abutting relation to said dipper arm.

4,375,346

DIAPHRAGM PUMP

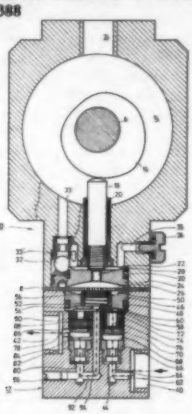
Menahem A. Kraus, Rehovot; Avinoam Livni, Haifa, and Moshe A. Frommer, Rehovot, all of Israel, assignors to A. T. Ramot Plastics Ltd., Tel Aviv, Israel

Filed Mar. 18, 1980, Ser. No. 131,370

Claims priority, application Israel, Mar. 29, 1979, 56975

Int. Cl.³ F04B *43/06, 43/12, 21/02*

U.S. Cl. 417—388 **4 Claims**



1. A diaphragm pump comprising a housing having an upper housing section and a lower housing section secured together at one of their ends; and a diaphragm supported between the secured ends of the housing sections; the upper housing sections including a rotatable drive shaft, a cam driven by said drive shaft, a cylinder, a piston reciprocated within said cylinder by said cam, and a cover disc closing the said secured end of said upper housing section; said cover disc being formed with an inwardly-dished outer face facing the diaphragm, and with a bore establishing communication between said dished outer face and the outer end of said cylinder; said lower housing section having an inlet for the fluid to be pumped, an outlet therefor, a fluid passageway connecting the inlet to the outlet, a pumping chamber communicating with said passageway which chamber is expanded and contracted by the reciprocation of said diaphragm effected by the reciprocation of said piston for pumping the fluid through said passageway, and a pair of check valves in said passageway permitting the fluid to flow only from the inlet to the outlet by the reciprocation of the diaphragm; said check valves being disposed along laterally-spaced parallel axes and providing a forward fluid flow through both valves in the same direction along the laterally-spaced parallel axes, the outlet of one check valve communicating with the inlet of the other check valve via a folded section of the passageway having two 180° bends; said upper housing section including a further cover disc closing the said secured end of the lower housing section, which further cover disc is formed with an inwardly-dished outer face facing the diaphragm and defining therewith said pumping chamber; said further cover disc being formed with a socket centrally of said inwardly-dished face and including a spring disposed within said socket urging the diaphragm in the return direction; said further cover disc being further formed with a recess underlying said socket and constituting a portion of the folded section of said passageway at a location between said pair of check valves, and a bore leading from said socket to said recess and thereby establishing communication between said pumping chamber and said folded section of said passageway.

4,375,347

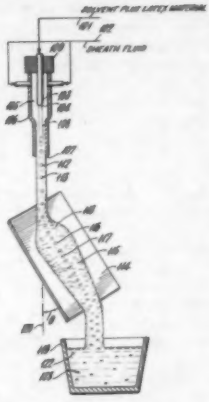
APPARATUS FOR PROMOTING THE FORMATION OF MICROPARTICLES

Igino Lombardo, Sharon, and Peter J. Natale, Canton, both of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Apr. 29, 1981, Ser. No. 258,714

Int. Cl.³ B01J *2/06*

U.S. Cl. 425—10 **5 Claims**



1. An apparatus for promoting the formation of microparticles from a flowing stream of a core liquid ejected from the exit of a vibrating nozzle concurrently and coaxially into a flowing stream of a sheath liquid forming a composite liquid stream having a longitudinal axis, wherein droplets formed of said core liquid within said sheath liquid stream are formed into microparticles, said apparatus comprising

a substantially flat surface of hydrophobic material disposed beneath said composite liquid stream, and upon which said composite liquid stream impinges to promote the formation of said microparticles, said surface being inclined at an angle of 1°–10° to said longitudinal axis of said composite liquid sheath.

4,375,348

CUTTING MACHINE FOR TRIANGLE CUTTING SHEETS OF PASTRY

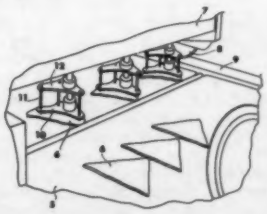
Maurizio D. Costa, Via Trento, 36, 20090 Cesano Boscone (Milano), Italy

Filed Nov. 1, 1979, Ser. No. 90,334

Claims priority, application Italy, Nov. 29, 1978, 30334 A/78

Int. Cl.³ A21J *11/00*

U.S. Cl. 425—305.1 **13 Claims**



1. A machine for forming croissants, brioches and the like

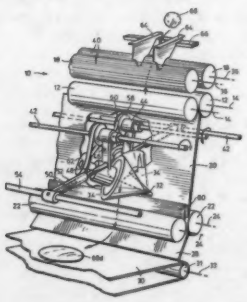
which comprises a pastry flattening stage operable to receive pastry dough and to flatten such dough into a pastry sheet delivered along a given conveyance path; a cutting stage having rotatable cutter blades arranged to cut said pastry sheet into a sequence of pastry triangles positioned at respective locations across said conveyance path, said pastry triangles upon being cut from the pastry sheet being oriented with a reference side of each pastry triangle in a first group thereof facing in one given direction with respect to the conveyance path, and with a similar reference side of each pastry triangle in a second group thereof facing in another given direction with respect to the conveyance path; a spacing and orienting stage, including an oil bath means, effective to reciprocate on two wheels; a carriage reciprocatably moveable along said conveyance path and bearing a plurality of catching elements spaced across the conveyance path in correspondence with the spacing of said pastry triangles, and moveable into engagement with corresponding pastry triangles to move same and moveable out of engagement with said pastry triangles to release same after moving them, said catching elements being rotatably moveable to orient the pastry triangles that they engage with their reference sides facing a common selected direction with respect to the conveyance path, said catching elements being also translatably moveable to position the pastry triangles they engage in a given spacing relation to one another prior to releasing said pastry triangles; and a forming stage disposed along the conveyance path to receive said pastry triangles released by said catching elements of the spacing and orienting stage and operable to wrap said pastry triangles into respective coiled configurations; said carriage being reciprocatably moveable between a position on the conveyance path where the catching elements engage, and thereby receive the pastry triangles from the cutting stage, to a position on the conveyance path where the catching elements release and thereby deliver the oriented and spaced pastry triangles to the forming stage.

4,375,349

APPARATUS FOR SHAPING DOUGH

Branko Vrbanek, 8 Gailgrove Ct., Bramalea, Ontario, Canada (L6S 2E1)

Filed Dec. 22, 1981, Ser. No. 333,460
Int. Cl.³ A21C *9/00*; B29D *7/14*
U.S. Cl. 425—324.1 **16 Claims**



1. Apparatus for shaping lumps of dough to flattened disks, each having a substantially circular shape, comprising:

at least a first pair of spaced, substantially cylindrical driven rollers having parallel horizontal axes of rotation, the width of the nip between said first pair of driven rollers being adjustable;

a slideplate positioned beneath the rearmost of said first pair of rollers and extending downwardly and forwardly therefrom to above the rearmost of a second pair of spaced, substantially cylindrical driven rollers having parallel horizontal axes of rotation, the width of the nip between said second pair of driven rollers being adjustable;

an opening in said slideplate above said second pair of rollers;

a guideway positioned beneath the rearmost of said second pair of rollers and extending downwardly and forwardly therefrom to a conveyor means;

and a pair of driven conical rollers, one on either side of said slideplate, said conical rollers being positioned so that their nip is slightly forward of said opening in said slideplate, and being gently urged towards one another;

all of said pairs of rollers being adapted for rotation towards each other in each pair for downwardly directed passage of the dough material as it moves through the respective nips of succeeding pairs of said rollers.

14. Apparatus for shaping lumps of dough to flattened disks, each having a substantially circular shape, comprising:

at least a first pair of spaced, substantially cylindrical driven rollers having parallel horizontal axes of rotation, the width of the nip between said first pair of driven rollers being adjustable;

conveyor means positioned so that dough material issuing from said first pair of rollers is directed to the nip between a pair of driven conical rollers, and further means for conveying dough issuing from between said conical rollers to a second pair of spaced, substantially cylindrical driven rollers having parallel horizontal axes of rotation, the width of the nip between said second pair of driven rollers being adjustable;

said pair of driven conical rollers being gently urged towards one another;

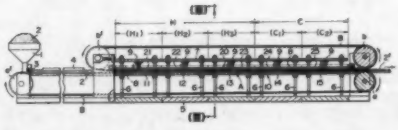
all of said pairs of rollers being adapted for rotation towards each other in each pair so that dough passing through said first pair of cylindrical driven rollers is directed to said conical pair of rollers, and dough passing through said conical pair of rollers is directed towards said second pair of driven cylindrical rollers.

4,375,350

APPARATUS FOR FORMING ELONGATED SYNTHETIC RESIN PLATE OR SHEET

Toshio Sato, Otsu, Japan, assignor to Sakushin Kogyo Co., Ltd., Kyoto, Japan

Filed Dec. 11, 1981, Ser. No. 329,926
Claims priority, application Japan, Dec. 29, 1980, 55-187705
Int. Cl.³ B30B *5/06*; B29D *7/14*
U.S. Cl. 425—371 **22 Claims**



1. In an apparatus for forming an elongated synthetic resin plate or sheet by supplying a resinous starting material having a predetermined thickness to between an upper steel belt and a lower steel belt, and heating the resinous starting material through the two steel belts while applying pressure, followed by cooling, the improvement wherein said lower steel belt is placed on a lower board and is intermittently fed by a predetermined distance, side frames are installed on the lower steel belt, said side frames stretching on both the right and left edges of the lower steel belt in the lenghwise direction thereof, said upper steel belt is disposed between said two side frames, an upper board is installed on the upper steel belt, either one of the upper board or the lower board is so constructed as to move up and down, the resinous starting material is pressed by the pressing operation of the board which moves up and down via the upper and lower steel belts, and the upper and lower

boards are divided into a plurality of blocks so as to correspond to the opposing ones, thereby to constitute heating zones having heating means and cooling zones having cooling means.

4,375,351

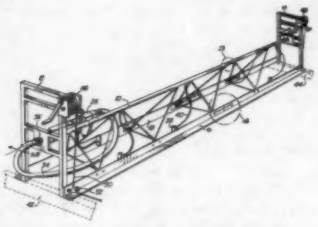
TRIANGULAR TRUSS CONCRETE SCREED HAVING A BLADE EXTENSION BRACKET

J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corporation, Paragould, Ark.

Division of Ser. No. 34,171, Apr. 26, 1979, Pat. No. 4,316,715. This application May 15, 1981, Ser. No. 264,052

Int. Cl.³ E01C *19/38*

U.S. Cl. 425—456 **8 Claims**



8. A screed for leveling freshly poured concrete lying in an area between opposing side forms to produce a smooth, finished concrete surface, said screed comprising:

a. a triangular truss frame having first and second ends and a top support member forming the apex of said triangular truss;

b. front and rear screed blades coupled in a spaced apart relationship to the lower portion of the front and rear of said frame for leveling the upper surface of said concrete;

c. means coupled to said screed for imparting vibratory motion to said front and rear screed blades;

d. a detachable screed blade extension bracket coupled to said top support member and to said front and rear screed blades and including front and rear vertically extending, spaced apart side members, said extension bracket further including an upper section extending above said top support member and

i. a front blade extension element coupled to the lower end of said front side member and aligned with said front screed blade for extending the effective length of said front screed blade by a predetermined desired amount;

ii. a rear blade extension element coupled to the lower end of said rear side member and aligned with said rear screed blade for extending the effective length of said rear screed blade by a predetermined desired amount;

iii. a first angled support strut extending from said front side member to said front blade extension element;

iv. a second angled support strut extending from said rear side member to said rear blade extension element; and

v. means for detachably coupling said blade extension bracket to said top support member and to said front and rear screed blades;

whereby said detachable screed blade extension bracket increases the effective length of said front and rear screed blades without extending the length of said top support member or the triangular truss frame of said screed.

4,375,352

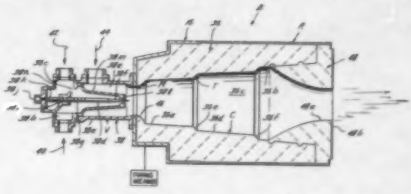
METHOD FOR MELTING A NON-FERROUS METAL CHARGE WITH LIQUID FUEL

Milton E. Berry, and Ronald L. Pariani, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Jun. 30, 1978, Ser. No. 921,039

Int. Cl.³ F23C *5/00*

U.S. Cl. 431—8 **3 Claims**



1. A method for heating and melting a non-ferrous metal charge in a furnace utilizing liquid fuel, atomizing air and combustion air without contaminating the charge with the liquid fuel, comprising the steps of:

separately supplying liquid fuel, atomizing air and combustion air to a burner assembly mounted adjacent a refractory block formed in the wall of said furnace;

pre-mixing the liquid fuel and atomizing air within a valve housing means by flowing said atomizing air into and through said liquid fuel before coming into contact with said combustion air, then further pre-mixing said liquid fuel and atomizing air by flowing said mixture through a needle valve means for atomizing the liquid fuel prior to combustion;

combining the atomized liquid fuel with combustion air adjacent a mixing throat formed between the needle valve means and an inlet portion of the refractory block after said pre-mixing step;

flowing the mixture of liquid fuel, atomizing air and combustion air from the mixing throat past a first stepped turbulence means into a combustion chamber formed in the refractory block;

turbulently mixing the mixture of liquid fuel, atomizing air and combustion air to ensure vaporization of the mixture for substantially complete combustion of the mixture within the combustion chamber;

burning the vaporized mixture in the combustion chamber in order to provide heat for heating and melting the non-ferrous metal charge, while preventing contamination of the non-ferrous metal charge in the furnace with uncombusted fuel; and

discharging the combusted mixture from the combustion chamber past a second stepped turbulence means through an exit venturi arranged within the refractory block, said exit venturi being of a diameter which reduces curvilinearly from an adjacentportion of the combustion chamber outwardly toward the throat of the refractory block;

whereby the metallurgical quality of the non-ferrous metal charge is maintained.

4,375,353

HEATER FOR CATALYTIC TYPE PROPANE OR ORGANIC GAS DETECTOR

Merle E. Nicholas, Minneapolis, and James J. Renier, Hamel, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 14, 1980, Ser. No. 196,882

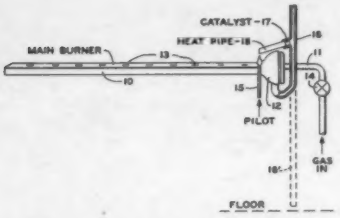
Int. Cl.³ F23N *5/24*; G08B *17/10*

U.S. Cl. 431—13 **8 Claims**

1. A heat pipe type heater for a catalytic gas detector, the apparatus comprising:

a catalytic gas detector requiring a source of heat for maintaining the catalyst at an elevated temperature; and,

heat pipe means for transferring heat to said catalyst from a standing flame of a gas burner means with said flame adapted to ignite fuel from a main burner means to thereby



maintain said catalyst at said elevated temperature, said heat pipe means having one end thereof proximate the flame and heated thereby, said heat pipe means having the other end thereof in heat transferring relation to the catalyst.

4,375,354

BAKERY OVEN AND AN OVEN CART RECEIVED THEREIN

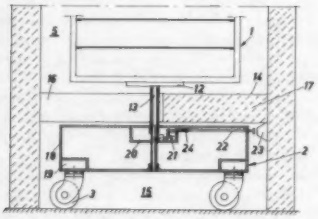
Roy Henriksson, Brämhult, Sweden, assignor to Elektro-Dahlen AB, Boras, Sweden

Filed May 27, 1981, Ser. No. 267,702

Claims priority, application Sweden, May 30, 1980, 8004036

Int. Cl.[3] **F27D** *3/00;* **A23L** *3/00;* **A23B** *4/04;* **F27D** *3/12*

U.S. Cl. 432—239 **7 Claims**



1. An installation for preparing food of the type wherein a bakery oven has an oven chamber for receiving through a door in the oven an oven cart comprised of a goods stand rotatably mounted about a vertical axis on a wheeled cart underframe, a lower chamber under the oven chamber for receiving the wheeled cart underframe, a drive means and a drive coupling member rotatably driven by said drive means mounted on the oven, and a driven coupling member mounted on said goods stand for engagement with the drive coupling member, comprising a substantially vertical axle shaft rotatably connecting said goods stand to said cart underframe in spaced relation, a floor in said oven separating said oven chamber from said lower chamber, a slot in said floor open at the oven door end for receiving said axle shaft when said oven cart is moved into and out of the oven, a releasable locking mechanism mounted on said oven cart for locking said goods stand against rotation with respect to said cart underframe when said oven cart is outside the oven, and release means mounted on the oven for cooperatively engaging and releasing said locking mechanism when said oven cart is placed in position within the oven so that said goods stand can be rotated within the oven.

4,375,355

ORTHOPAEDIC DENTOFACIAL CORRECTION APPLIANCE

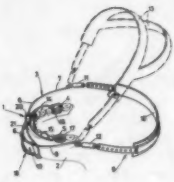
Jose Dahan, Kraainem, Belgium, assignor to Dentaurum H.P. Winkelstroeter KG, Ispringen, Fed. Rep. of Germany

Filed Jan. 15, 1980, Ser. No. 112,286

Claims priority, application Belgium, Jan. 17, 1979, 873533

Int. Cl.[3] **A61C** *7/00*

U.S. Cl. 433—5 **9 Claims**



1. An orthopaedic dentofacial appliance for the correction of shape and position deformities of a lower mandible carrying a pair of molars on left and right rearwardly extending portions thereof and having a chin portion and a transverse axis characterized in the provision of first relatively rigid frame having first portions for engaging said molars to exert a first force on said mandible in the region of said molars and in a first direction and a second portion for exerting a second force on said chin portion in a direction at an angle to said first direction and means for applying a force to said frame at a location between said first portions and said second portion to cause said portions to exert said first and second forces to exert a couple on said mandible tending to rotate said mandable around said transverse axis in a direction to correct a deformity.

4,375,356

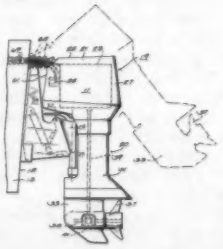
ARRANGEMENT FOR SUPPLYING AIR, FUEL, POWER AND CONTROL CABLES TO A MARINE PROPULSION UNIT

Myron T. Stevens, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 24, 1980, Ser. No. 190,387

Int. Cl.[3] **B63H** *5/06*

U.S. Cl. 440—112 **6 Claims**



4. A marine propulsion installation comprising a boat hull including a transom, a propulsion device including a powerhead compartment which is located aft of said transom, which has an interior housing an internal combustion engine, and which is substantially closed, a duct extending through said transom and including a hollow interior in communication with the atmosphere forwardly of said transom and with the interior of said powerhead compartment, and one or more of a group of flexible components extending from forwardly of said transom and through said duct to within said powerhead compartment, said group of flexible components comprising a fuel line, an electrical conductor, a hydraulic fluid line, and a mechanical cable.

4,375,357

WATER-SOLUBLE FAST POLYMERIC BLACK COLORANT, ITS PREPARATION AND USE IN DYES AND INKS

Robert E. Wingard, Jr., Mountain View; Steve Y. W. Ng, San Francisco, and Sally A. Swanson, San Jose, all of Calif., assignors to Dynapol, Palo Alto, Calif.

Filed Jun. 9, 1981, Ser. No. 271,913
Int. Cl.[3] C09B *69/10*
U.S. Cl. 8—647 17 Claims

1. A water-soluble polymeric black colorant which comprises an organic polymer backbone comprising a plurality of aromatic rings and a plurality of units of 8-(4-anilino-5-sulfo-1-naphthylazo)-1-naphthol-3,6-disulfonic acid or a cation salt thereof covalently bonded to said backbone via azo groups that link a backbone aromatic carbon and the 2-position carbon of said acid or cation salt units.

4,375,358

FUEL SLURRIES OF SOLID CARBONACEOUS MATERIAL IN WATER

Charles J. Swartz, and William P. Scott, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 2, 1980, Ser. No. 183,525
Int. Cl.[3] C10L *1/32*
U.S. Cl. 44—51 7 Claims

1. A stable, pumpable slurry composition of finely divided solid carbonaceous material in water wherein said slurry comprises:

(a) at least 40 percent by weight of finely divided solid carbonaceous material;

(b) water in an amount sufficient to provide a pumpable slurry;

(c) a sufficient amount of a wetting agent in said water to effect wetting of the surface of said carbonaceous material;

(d) water-dispersible Xanthan gum in said water in an amount sufficient to provide a supporting gel having a yield stress sufficient to support said carbonaceous material in said slurry; and

(e) a water-soluble viscosity builder selected from the group consisting of sodium carboxymethyl cellulose, hydroxypropylated cornstarch, hydroxyethyl cellulose, hydroxypropyl methyl cellulose and methyl cellulose in said water in an amount sufficient to substantially reduce bleeding of the supporting gel, whereby said slurry is stabilized against sedimentation caused by bleeding of the supporting gel.

4,375,359

WATER BASED FIRESIDE ADDITIVE

Stuart R. Chapman, Acton, and F. Ross Pollard, Oakville, both of Canada, assignors to Dearborn Chemical Company Limited, Mississauga, Canada

Filed Nov. 2, 1979, Ser. No. 90,732
Int. Cl.[3] C10L *1/12*
U.S. Cl. 44—51 8 Claims

1. The method of introducing a water-soluble fireside additive into an oil-fired furnace equipped with a homogenizer, fuel feed comprising adding the additive as an aqueous solution into the homogenizer.

4,375,360

METHANOL FUEL AND METHANOL FUEL ADDITIVES

Paul H. Washecheck, Ponca City, Okla.; Andrew T. C. Liu, Houston, Tex., and E. Flynt Kennedy, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jan. 12, 1981, Ser. No. 223,980
Int. Cl.[3] C10L *1/18*
U.S. Cl. 44—53 7 Claims

1. A method for preparing a methanol fuel comprising adding to said methanol fuel from about 0.05 to about 15% by volume of a lubricating additive or a mixture of lubricating additives comprising polyol esters having the general formula

$$R_1(CH_2OCR_2)_x$$

where R_1 and R_2 are, independently, linear or branched acyclic, alicyclic, cyclic, or aryl groups containing from 1 to 30 carbon atoms and x is 2–4; and the total number of carbon atoms in R_1 and R_2 is from 10 to 40.

4,375,361

PROCESS FOR MAKING A HIGH OCTANE FUEL COMPONENT

James E. Lyons, Wallingford; George Suld, Springfield; Robert W. Shinn, Aston, and Kenneth A. Scott, Swarthmore, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Mar. 24, 1980, Ser. No. 133,172
Int. Cl.[3] C10L *1/18*
U.S. Cl. 44—70 26 Claims

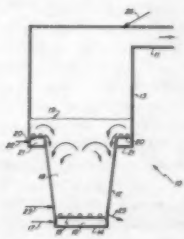
1. A process for converting a mixture of substantially aromatics-free branched and straight chain C_5–C_9 hydrocarbons to a high octain fuel component having a blending value octane number of at least about 100 by mild, liquid phase oxidation at a temperature between about 120° and about 160° C. at about 200 to about 1000 psig pressure to a product of moderate to low acidity, distilling off a neutral oxidate, esterifying the residue of said distillation with a lower alkanol to a neutral product and combining the neutral oxidate and the esterified product.

4,375,362

GASIFICATION OF ASH-CONTAINING SOLID FUELS

Gerald Moss, Wantage, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 60,852, Jul. 26, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,608
Claims priority, application United Kingdom, Jul. 28, 1978, 31450/78
Int. Cl.[3] C10J *3/54*
U.S. Cl. 48—197 R 14 Claims



1. A method of converting an ash-containing solid or semi-solid fuel to a combustible gas comprising establishing a single fluidized fuel conversion bed having a bottom zone operating at fuel conversion conditions including a temperature below ash-softening temperatures, and an upper zone operating at fuel conversion conditions including ash-softening temperatures, feeding all of the fuel directly into the bottom zone whereby at least some of the fuel is converted in the bottom zone to combustible gas and vapor-phase precursors thereof, and whereby unconverted solid particles of fuel material of reduced size and/or weight together with at least some associated ash are upwardly entrained into the upper zone wherein at least some of the unconverted solid fuel material from the bottom zone is converted to combustible gas so that a reduced

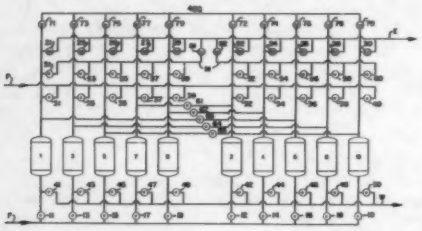
quantity of fuel material is elutriated from the bed and wherein at least some of the ash softens and agglomerates and/or sticks to solids in the upper bed zone so that a reduced quantity of ash is elutriated out of the conversion bed and so that bed solids comprising agglomerated and/or adhered ash sink from the upper zone of the bed to a bottom region of the bottom zone of the bed from where they can be withdrawn.

4,375,363

SELECTIVE ADSORPTION PROCESS FOR PRODUCTION OF AMMONIA SYNTHESIS GAS MIXTURES

Andrija Fuderer, Antwerp, Belgium, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 5, 1978, Ser. No. 966,586
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—25 **25 Claims**



1. In a process for forming a gas mixture containing hydrogen and nitrogen for ammonia synthesis wherein a feed gas mixture containing hydrogen and adsorbable impurities is separated by selective adsorption of said impurities in each of multiple adsorbent beds by the cycle of introducing feed gas mixture to the bed inlet end at first highest superatmospheric pressure, discharging unadsorbed hydrogen-rich gas from the bed discharge end, releasing initial void space gas from the bed discharge end and introducing the so-released initial gas to the discharge end of another adsorbent bed previously purged of said impurities and initially at lower pressure until the two beds are pressure equalized at higher intermediate pressure, releasing additional gas from the bed for depressurization thereof to lowest pressure, introducing purge gas to the bed discharge end for desorption of impurities and purging through the bed inlet end, and repressurizing the purged bed to said fist highest superatmospheric pressure and thereafter repeating the cycle, the improvement comprising at least one of the following steps:

(a) purging the bed during said purging step with external source nitrogen gas such that at the termination of said purging step nitrogen gas is retained in the bed, compressed in the subsequent purged bed repressuring step to said first highest superatmospheric pressure and thereafter discharged in said unadsorbed hydrogen-rich gas, with the discharged gas forming said gas mixture containing hydrogen and nitrogen; and

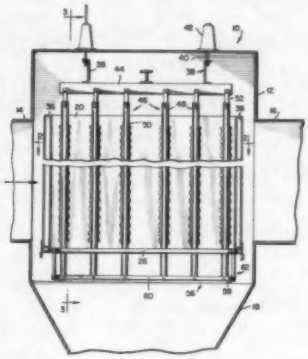
(b) repressurizing the bed during the repressurizing step with external source nitrogen gas such that the introduced nitrogen gas is compressed to said first highest superatmospheric pressure and thereafter discharged in said unadsorbed hydrogen-rich gas, with the discharged gas forming said gas mixture containing hydrogen and nitrogen.

4,375,364

RIGID DISCHARGE ELECTRODE FOR ELECTRICAL PRECIPITATORS

Harold E. Van Hoesen, Neshanic Station, and Jakoplic, Richard, Somerset, both of N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Continuation of Ser. No. 179,981, Aug. 21, 1980, abandoned, and Ser. No. 903,837, May 8, 1978, abandoned. This application Oct. 20, 1981, Ser. No. 313,223
Int. Cl.³ B03C *3/47*
U.S. Cl. 55—152 **7 Claims**



1. An electrostatic precipitator comprising a housing having a dirty gas inlet and a clean gas outlet, a plurality of spaced parallel extended surface collecting electrodes, spaced electrode rigidifying baffle elements extending vertically from top to bottom of said collecting electrodes, said baffle elements being further arranged in opposed manner to the baffles of opposed collecting electrodes, means rigidly supporting the collecting electrodes in the gas flow path through said housing, a discharge electrode system in the said housing in precipitating alignment to said collecting electrodes, said discharge electrode system comprising a horizontal top conductive beam rigidly connected to the precipitator high-tension frame, a plurality of rigid electrodes, each said electrode comprising a hollow support member, each said support member having a partially flattened ellipsoidal configuration in transverse cross section, corona members carried by the support member, said corona members projecting substantially along a plane passing through the long axis of each support member, said electrode and support member configuration serve to prevent highly localized high corona current spots on said collecting electrodes, and at least an upper termination member secured in the upper end of the hollow support member, means connecting the upper termination member to the said top conductive beam, a lower discharge electrode support frame underlying the rigid discharge electrodes and substantially transversely co-extensive with said rigid discharge electrodes, means connecting each lower end of the hollow support members of each said rigid discharge electrodes to the lower discharge support frame.

4,375,365

CENTRIFUGAL CHAMBER FILTER FOR SEPARATING SOLIDS FROM A GAS STREAM

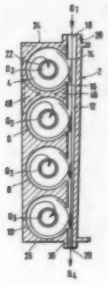
Friedrich-E. Müller, Eisdorf; G. Wolfgang Oesterwind, Osterode, and Jürgen Nothdurft, Clausthal-Zellerfeld, all of Fed. Rep. of Germany, assignors to Anton Piller GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 344,947

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3103947

Int. Cl.³ B01D 45/12

U.S. Cl. 55—346 11 Claims



1. A filter for separating, by centrifugal force, solids suspended in a gas stream, the filter being of the kind having parallel flow channels and a plurality of centrifugal chambers each of which adjoins a flow channel with a trailing edge and a leading edge and between these edges is open to the flow channel over part of its wall area; each chamber having two outlet pipes therein which are disposed coaxially in the chamber, which extend towards each other from the end walls of the chamber and which are connected to a purified gas outlet, the filter comprising a plurality of separate multi-stage filter elements in each of which there is at least one of said flow channels and a plurality of said centrifugal chambers communicating with the flow channel, the cross-sectional area of the flow channel reducing from chamber to chamber according to the desired flow velocity, the filter element having an inlet and an outlet in respective end walls of the filter element, the filter also comprising a filter housing; two opposite walls spaced apart in said filter housing and between which said filter elements are located, said opposite walls having passages therein with which the respective inlets and outlets of the flow channels of the filter elements communicate, the filter housing having at least one purified gas outlet communicating with the space within the filter housing between said opposite walls therein and through that space with the outlet pipes of the centrifugal chambers of the filter elements and having outside one of said opposite walls a crude gas inlet communicating with the inlets of the flow channels of the filter elements and outside the other of said opposite walls a residual gas outlet communicating with the outlets of the flow channels of the filter elements.

4,375,366

CENTRIFUGAL CHAMBER FILTER FOR SEPARATING SOLIDS FROM A GAS STREAM

Friedrich-E. Müller, Eisdorf; G. Wolfgang Oesterwind, Osterode, and Jürgen Nothdurft, Clausthal-Zellerfeld, all of Fed. Rep. of Germany, assignors to Anton Piller GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 344,948

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3103910

Int. Cl.³ B01D 45/12

U.S. Cl. 55—416 11 Claims

1. A filter having a cylindrical centrifugal chamber into which gas from which solids are to be separated is introduced with a centrifugal motion and outlet pipes for leading away purified gas, the outlet pipes extending inwardly of the chamber and facing towards each other from the chamber ends, said outlet pipes having inlets at their adjacent ends, said filter also including a distributor having circumferentially-spaced radial blading and mounted between said adjacent inlet ends of said outlet pipes within said chamber.

4,375,367

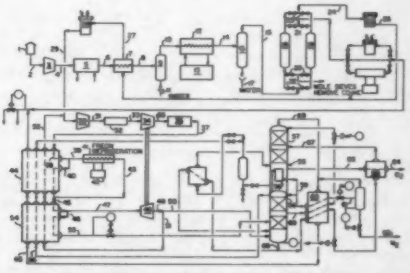
LOWER POWER, FREON REFRIGERATION ASSISTED AIR SEPARATION

Alan L. Prentice, Surbiton, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 20, 1981, Ser. No. 255,910

Int. Cl.³ F25J 3/04

U.S. Cl. 62—13 5 Claims



1. A process for separating air for the recovery of 30 to 60 tons of product per day in the form of liquid oxygen and liquid nitrogen comprising the steps of:

(a) compressing an initial feed air stream;

(b) separating carbon dioxide and water from said compressed feed air stream;

(c) compressing the separated feed air stream and a recycle air stream in a recycle compressor;

(d) further compressing the air stream in a single compressor which is mechanically driven by a single expander;

(e) cooling the air stream initially in a main heat exchanger

against product streams and a single expanded recycle stream;

(f) further cooling a portion of the initially cooled air stream passing through said heat exchanger by removing a split-out sidestream from the remaining stream in the main heat exchanger and cooling it by direct heat exchange of said split-out side stream with a freon refrigeration unit;

(g) recombining the freon refrigeration cooled split-out sidestream with the remaining stream from the main heat exchanger downstream of said main heat exchanger;

(h) introducing the recombined air stream into a second heat exchanger;

(i) further dividing the cooled recombined feed air stream into a sidestream and a remaining stream which continues through said second heat exchanger for further cooling;

(j) expanding the sidestream to a lower temperature and pressure by passing it through an expander which is mechanically joined to the compressor of step (d);

(k) splitting the expanded sidestream into a feed stream to a distillation column and a recycle stream;

(l) recycling said recycle stream to said recycle compressor through the second and the main heat exchangers to provide cooling for the feed air stream and combining the recycle stream with the feed stream of step (c);

(m) cooling said remaining stream of step (i) in heat exchange relationship with said recycle stream;

(n) injecting the cooled remaining stream into said distillation column;

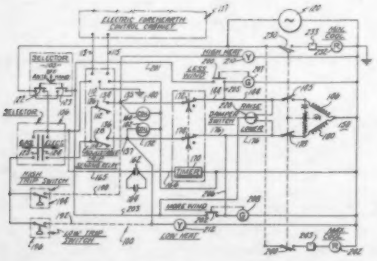
(o) separating the feed stream of step (k) and the remaining stream of step (n) in said distillation column and producing both liquid oxygen and liquid nitrogen in said column.

4,375,368

METHOD AND APPARATUS FOR AUTOMATIC ADJUSTMENT OF COOLING WIND IN A FOREHEARTH

James F. Stevenson, West Hartford, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Oct. 19, 1981, Ser. No. 313,058
Int. Cl.³ C03B 5/23, 5/24
U.S. Cl. 65—29 **10 Claims**



1. In a cooling wind adjustment system in a forehearth, said system having a distribution network for distributing cooling air into said forehearth, an inlet control valve and an outlet damper for controlling the amount of said cooling air flowing through said forehearth, said forehearth containing material maintained at a predetermined lengthwise descending temperature gradient by the input of a form of energy, the improvement comprising:

first means for sensing the level of energy input to said forehearth;

second means responsive to said first means for producing a first signal when a first predetermined level of said energy is being used;

third means responsive to said first means for producing a second signal when a second predetermined level of said energy is being used, said first predetermined level being greater than said second predetermined level; and

means for incrementally decreasing the amount of said cooling air in response to said first signal and means for incrementally increasing the amount of said cooling air in response to said second signal.

9. A method of minimizing the level of energy input required by a glass forehearth in order to maintain the glass in each zone of said forehearth at a predetermined temperature, said forehearth having a cooling wind distribution system for blowing cooling wind into said forehearth with the temperature controlled by the heating means in said forehearth in order to cause said glass to flow through said forehearth at a predetermined temperature gradient, said method comprising the steps of:

a. continuously sensing the level of said energy input to said forehearth;

b. producing a first signal in response to the occurrence of a predetermined low level of said energy input;

c. producing a second signal in response to the occurrence of a predetermined relatively higher level of said energy input;

d. incrementally increasing the amount of said cooling wind a small, first predetermined amount in response to the ocurrence of said first signal and not enabling any increase in cooling wind amount during a first predetermined time following said first predetermined amount change in order to permit temperature stabilization within said forehearth;

e. incrementally decreasing the amount of said cooling wind a small, second predetermined amount in response to the ocurrence of said second signal and not enabling any decrease in cooling wind amount during a second predetermined time following said second predetermined amount change in order to permit temperature stabilization within said forehearth;

f. maintaining a steady amount of cooling wind during the time neither said first nor second signal is produced;

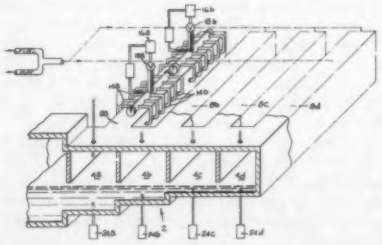
g. repeating steps a through f.

4,375,369

METHOD AND APPARATUS FOR CONTROLLING TEMPERATURES WITHIN A STREAM OF MOLTEN MATERIAL

Gary C. Border, Bowling Green, and Richard A. Patznick, Toledo, both of Ohio, assignors to Manville Service Corporation, Denver, Colo.

Continuation of Ser. No. 124,018, Feb. 25, 1980, abandoned, which is a continuation of Ser. No. 904,730, May 11, 1978, abandoned. This application May 18, 1981, Ser. No. 264,926
Int. Cl.³ C03B 5/24
U.S. Cl. 65—29 **4 Claims**



1. A forehearth temperature control process, said forehearth comprising a number of conditioning channels, said channels leading molten glass to a plurality of forehearth legs, said legs being segmented into a plurality of zones, wherein said process controls the temperature of molten glass as it flows through said zones, comprising:

(a) establishing a desired molten glass temperature for a zone,

(b) sensing the current molten glass temperature in said zone at a regular time interval,

(c) sensing the current atmospheric temperature in said zone at said regular time interval,

(d) sensing the current molten glass temperature in the immediately preceding zone at said regular time interval,

(e) accumulating data in a storage device said data including all historical molten glass and atmospheric temperatures in said zone for a preselected time period which is defined as a plurality of said regular time intervals,

(f) after each of said regular time intervals comparing the last sensed molten glass temperature for said zone with the desired molten glass temperature for said zone,

(g) when the comparison is not within an acceptable range of said desired molten glass temperature, generating a control signal, said control signal being generated in response to inputs including said current molten glass and atmospheric temperatures in said zone, said current molten glass temperature in the immediately preceding zone and said accumulated data, each of said inputs being multiplied by a different predetermined weighting factor to produce a corresponding resultant value, said resultant values being summed to arrive at a proper magnitude for said control signal,

(h) sending said control signal to a regulator for controlling heat input to said zones, and

(i) adding said last sensed molten glass and atmospheric temperatures in said zone to said accumulated data storage device.

3. Apparatus for controlling the temperature of molten glass in a forehearth, said forehearth comprising a number of conditioning channels, said channels leading molten glass to a plurality of forehearth legs, said legs being segmented into a plurality of zones, said temperature control apparatus comprising:

(a) means for sensing the current molten glass temperature in a zone at a regular time interval,

(b) means for sensing the current atmospheric temperature in said zone at said regular time interval,

(c) means for sensing the current molten glass temperature in the immediately preceding zone at said regular time interval,

(d) means for accumulating and storing data which includes all historical molten glass and atmospheric temperatures in said zone for a preselected time period that is defined by a plurality of said regular time intervals,

(e) means for comparing at the end of each of said regular time intervals said last sensed current molten glass temperature with a desired molten glass temperature for said zone,

(f) means for generating a control signal in response to inputs including said current molten glass and atmospheric temperatures in said zone, said current molten glass temperature in said immediately preceding zone and said accumulated and stored data when said last sensed current molten glass temperature is not within an acceptable range of said desired molten glass temperature, each of said inputs being multiplied by a different predetermined weighting factor to produce a corrresponding resultant value, said resultant values being summed to arrive at a proper magnitude for said control signal,

(g) means for sending said control signal to a regulator for adding heat to said zone, and

(h) means for adding said last sensed molten glass and atmospheric temperatures in said zone to said accumulated and stored data.

4,375,370

THERMAL CONTROL IN A METHOD OF BIDIRECTIONALLY ATTENUATING GLASS IN A FLOAT PROCESS

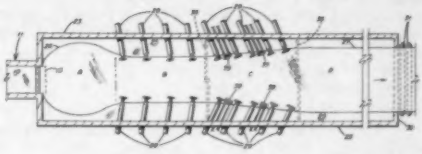
Raymond J. Mouly, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 137,329, Apr. 4, 1980, Pat. No. 4,305,745. This application Oct. 2, 1981, Ser. No. 307,814

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.³ C03B *18/02*

U.S. Cl. 65—99.5 **9 Claims**



1. A method of making a continuous sheet of glass of below equilibrium thickness comprising the steps of:

delivering a stream of molten glass at a first end of a longitudinally extending pool of molten metal onto a first zone of the molten metal pool at a rate such that the glass thickness in the first zone is maintained greater than equilibrium thickness;

drawing a ribbon of glass in a horizontal longitudinal direction from the first zone onto a second zone of the molten metal pool and stretching the ribbon in the second zone in a longitudinal direction while being restrained against shrinkage in the transverse direction while the glass is at a temperature below 1700 ° F. (925° C.) so that substantial reduction of the glass thickness to a thickness below equilibrium is effected in the second zone, and deviations from surface flatness of the ribbon are drawn into elongated distortions extending substantially longitudinally;

further drawing the ribbon of glass in the longitudinal direction from the second zone onto a third zone of the molten metal pool and stretching the ribbon in the third zone in the transverse direction while the glass is at a temperature of 1450° to 1600° F. (790° to 870° C.) so that additional reduction of glass thickness is effected, and the longitudinally extending surface distortions are stretched in the transverse directions, thereby reducing their spatial frequencies;

further drawing the ribbon of glass in the longitudinal direction from the third zone onto a fourth zone and cooling the glass in the fourth zone sufficiently to be dimensionally stable; and

withdrawing the dimensionally glass ribbon of less than equilibrium thickness from a second end of the pool of molten metal, whereby a ribbon of glass is produced in which light transmitted through the glass is affected by optical distortion of reduced optical power.

4,375,371

METHOD FOR INDUCTION MELTING

Balaji V. Patil, Sarver, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Jun. 12, 1981, Ser. No. 273,128

Int. Cl.³ C21C *5/52*; C22B *4/00*

U.S. Cl. 75—10 R **12 Claims**

1. A method of melting an alloy in an induction furnace, comprising charging an induction furnace with metallic raw materials of generally elemental metallics, at least a portion of which contain greater than 100 ppm of oxygen in any form, charging said induction furnace with boron in any form in an amount of at least 0.02% by weight of the total charge, melting said charge materials in said induction furnace and thereafter

pouring the melt from the furnace into a mold for solidification and formation of an ingot.

4,375,372

USE OF CUBIC RARE EARTH-IRON LAVES PHASE INTERMETALLIC COMPOUNDS AS MAGNETOSTRICTIVE TRANSDUCER MATERIALS

Norman C. Koon, Alexandria, Va., and Albert I. Schindler, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 16, 1972, Ser. No. 235,410
Int. Cl.[3] C22C *33/00*
U.S. Cl. 75—123 E 6 Claims

1. A method of converting electromagnetic energy to mechanical energy which comprises subjecting a magnetostrictive compound represented by the formula $R'_xR''_{(1-x)}Fe_2$ wherein R' and R'' are different rare earth elements and are selected from the class consisting of holmium, erbium, and dysprosium and x ranges from 0 to 1, said compound being formed into a magnetostrictive device element, to a variation in magnetic field, whereby mechanical energy is produced in the form of a change in physical size of said magnetostrictive compound.

4,375,373

METHOD OF COATING INORGANIC PIGMENTS (ULTRAMARINE AND BRONZE POWDER) WITH DENSE AMORPHOUS SILICA

Nobuyoshi Abe; Kiyoshi Kanemaru, both of Urawa, and Minoru Yokoyama, Tokyo, all of Japan, assignors to Toro Ganryo Kogyo Co., Ltd. and Nippon Chemical Industrial Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 108,609, Dec. 31, 1979. This application Dec. 1, 1981, Ser. No. 326,255
Claims priority, application Japan, Dec. 29, 1978, 53-162203; Dec. 29, 1978, 53-162204; Feb. 26, 1979, 54-20876; Feb. 26, 1979, 54-20877; Apr. 10, 1979, 54-42563; Apr. 10, 1979, 54-42564; Apr. 17, 1979, 54-46085; Apr. 17, 1979, 54-46086
Int. Cl.[3] C09C *1/32, 1/66, 1/00*
U.S. Cl. 106—308 B 6 Claims

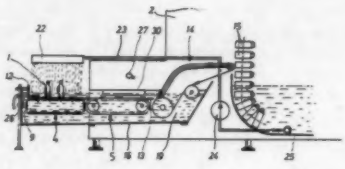
1. A process for preparing a stable inorganic pigment which comprises adding an aqueous solution of sodium silicate having a concentration of sodium silicate of from 1 to 10 wt % as SiO_2 and an aqueous solution of one or more compounds simultaneously to an aqueous slurry of pigment having a pigment concentration of about 50 to 300 g/l to react the two solutions and thereby form and deposit a continuous non-porous coating of amorphous silica on the surface of said pigment, wherein said reaction is carried out at a temperature of at least about 60° C. to 100° C. for 1 to 6 hours such that the pH of the slurry is controlled constant at a predetermined pH within the range of from 7 to 11, said compounds having a solubility of at least about 0.01 g/100 g water at 20° C., providing a pH of at least about 1.0 in a 3.0 wt % aqueous solution and being selected from the group consisting of aliphatic carboxylic acids, oxycarboxylic acids, an ester or aldehyde of said above acids, a sodium salt of hydrogen sulfate or hydrogen carbonate, and ammonium salt of a halogen acid or a sulfurous oxyacid and ethylene carbonate, wherein said pigment is selected from the group consisting of ultramarine and bronze powder.

4,375,374

METHOD AND APPARATUS FOR TRANSPORTING GLASS VESSELS

Hermann Kronseder, Worth, and Karl Dullinger, Neutraubling, both of Fed. Rep. of Germany, assignors to Krones AG Hermann Kronseder Maschinenfabrik, Worth, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,093
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006490
Int. Cl.[3] B08B *3/04, 9/00*
U.S. Cl. 134—25.4 10 Claims



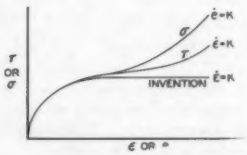
9. A method of transporting a series of upstanding colliding glass vessels in a manner that reduces noise resulting from collisions comprising transporting said glass vessels in an upright standing attitude so that said vessels are free to strike each other while keeping said vessels partially immersed in a sound-absorbing liquid during transport.

4,375,375

CONSTANT ENERGY RATE FORMING

Anthony F. Giamei, Middletown, and Robert E. Doiron, East Haddam, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 30, 1981, Ser. No. 315,598
Int. Cl.[3] C22F *1/10, 1/18*
U.S. Cl. 148—11.5 F 6 Claims



1. A method for hot working materials selected from the group consisting of iron base superalloys, nickel base superalloys, cobalt base superalloys, titanium alloys, tool steels and refractory metals, which comprises hot working the material using dies which have been heated to the working temperature using a deformation rate which is adjusted so that the energy input the workpiece is substantially constant with respect to time.

4,375,376

RETARDED AGING, RIMMED STEEL WITH GOOD SURFACE QUALITY

Clifford E. Rowden, Bay Village; Gregory J. McLean, Brecksville; Joseph E. Franklin, Medina, and Dionisyj W. Demianczuk, Parma, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation of Ser. No. 108,665, Dec. 31, 1979, abandoned. This application Dec. 9, 1981, Ser. No. 329,020
Int. Cl.[3] C22C *38/12*
U.S. Cl. 148—12 F 16 Claims

1. A rimmed steel product which is produced by rolling and

is essentially non-aging, consisting of a skin of rimmed steel which is essentially ferrite, over the principal surface area of the product, and beneath said skin a core of substantially non-aging rimmed steel, the steel of said skin consisting essentially of 0.04 to 0.12% C, 0.2 to 0.8% Mn, and 0.035 max. % S, balance iron and incidental elements, said core consisting essentially of 0.04 to 0.12% C, 0.2 to 0.8% Mn, 0.035 max. % S, together with aging-retardant element or elements selected from the group consisting of 0.075 to 0.2% V, 0.009 to 0.04% B, or 0.03 to 0.2% V and 0.005 to 0.04% B, said core also containing one or more elements from the group consisting of 0 to 0.01% Cb, 0 to 0.15% Si, 0 to 0.01% Ti, 0 to 0.01% Zr, and 0 to 0.01% Al, balance iron and incidental elements.

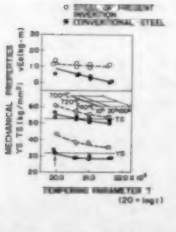
13. A method of making an essentially non-aging, rolled product of rimmed steel, comprising pouring an ingot mold 80% to 95% full of molten steel consisting essentially of 0.04 to 0.12% C, 0.2 to 0.8% Mn, 0.035 max. % S, balance iron and incidental elements, allowing said filling to undergo rimming action while a shell of rimmed steel solidifies next to the mold surrounding a still-molten core, and then completing pouring of said molten steel into said ingot mold while adding to the molten steel in the mold, sufficient material to provide in the finished core: steel having the aforesaid composition together with aging-retardant element or elements selected from the group consisting of 0.075 to 0.2% V, 0.009 to 0.04% B, or 0.03 to 0.2% V and 0.005 to 0.04% B, and also together with 0 to 0.01% Cb, 0 to 0.15% Si, 0 to 0.01% Ti, 0 to 0.01% Zr, and 0 to 0.01% Al; and after solidification of the ingot, converting the same by rolling, to a rolled product having a skin of rimmed steel which is essentially ferrite, over the principal surface area of the product.

4,375,377

STEELS WHICH ARE USEFUL IN FABRICATING PRESSURE VESSELS

Hiroo Ohtani, and Seiichi Watanabe, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Limited, Osaka, Japan

Filed Feb. 25, 1981, Ser. No. 237,958
Int. Cl.³ C21D 8/02
U.S. Cl. 148—12 F **4 Claims**



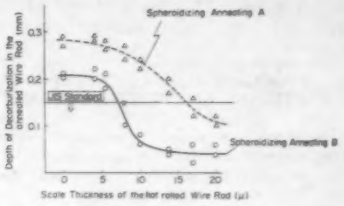
1. A method of manufacturing a steel plate which consists essentially of 0.11 to 0.17% of C, 0.50 to 1.20% of Si, 0.46 to 1.00% of Mn, 1.00 to 1.50% of Cr, 0.45 to 0.65% of Mo, 0.0002 to 0.0009% of B, 0.010 to 0.100% of Sol. Al, and the balance of Fe, said method including heating a slab for the plate rolling at a temperature of not more than 1150° C.

4,375,378

PROCESS FOR PRODUCING SPHEROIDIZED WIRE ROD

Saburo Ohtani; Toshimichi Mori, and Soichi Izumi, all of Muroranshi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,223
Claims priority, application Japan, Dec. 7, 1979, 54-157997; Sep. 24, 1980, 55-131579
Int. Cl.³ C21D 1/76, 8/06
U.S. Cl. 148—12 B **3 Claims**


Spheroidizing Annealing A
Spheroidizing Annealing B
JIS Standard
Depth of Decarburization in the annealed Wire Rod (mm)
Scale Thickness of the hot rolled Wire Rod (μ)

1. A process for producing a cold forging steel wire rod having a reduced decarburized layer thickness on the surface and excellent cold forgeability consisting essentially of:

hot rolling a steel wire rod and permitting the hot rolled wire rod to stand for at least 8 seconds to form a layer of scale having a thickness of at least 8 microns on the surface of the rod;

quenching the hot rolled wire rod at a cooling rate of at least 4° C./sec. to produce a rapidly cooled structure composed of sorbite and/or bainite as well as a small amount of incidental martensite; and

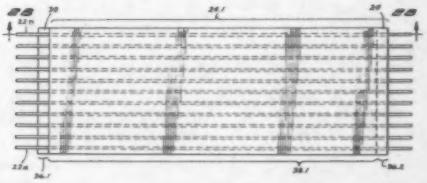
spheroidizing annealing said rod in an inert gas having a moisture content of about 0.04 to about 0.1%.

4,375,379

PROCESS OF MAKING A MULTIPLE CONDUCTOR FLEXIBLE WIRE CABLE

Edwin J. Laetzow, Northfield, Minn., assignor to Teltec, Inc., Farmington, Minn.

Division of Ser. No. 959,074, Nov. 9, 1978. This application May 4, 1981, Ser. No. 260,294
Int. Cl.³ H01B 13/10, 7/08
U.S. Cl. 156—52 **13 Claims**



1. The process for manufacturing a flexible wire cable comprising the steps of:

a. positioning wire conductors in a predetermined configuration;

b. positioning a first sheet of insulation including a thermosetting polyester adhesive coating over said wire conductors;

c. bonding said first insulation sheet as a first function of time, temperature, and pressure to said wire conductors and partially curing said adhesive;

d. positioning a second sheet of insulation including a coating of said thermosetting polyester adhesive over said wire conductors and opposing said first sheet of insulation,

said sheets forming an offset and overlap at one or both ends of said sheets; and,

e. bonding said second insulation sheet to said wire conductors and said first insulation sheet as a second function of time-temperature-pressure and fully curing said adhesive whereby each of said wire conductors are substantially surrounded 180° by each of said adhesive coatings and said insulation sheets and channels are formed in said insulation sheets between each of said wire conductors and said offset end provides a solder stop and controlled flexing of said wire conductors thereby providing a flexible wire cable about the offset end and about each conductor.

4,375,380

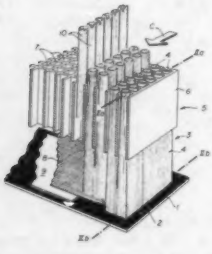
PROCESS AND INSTALLATION FOR MANUFACTURING A PHOTOTHERMAL CONVERTER APPARATUS

Pierre Genequand, Geneva; Guy N. Hindi, Onex; Daniel Gross, Geneva; Hermann Pfeifer, Moillesulaz, and Reinhard Kalbskopb, Onex, all of Switzerland, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation of Ser. No. 101,152, Dec. 7, 1979, abandoned. This application Jul. 2, 1981, Ser. No. 280,103

Int. Cl.³ A46D *1/00;* **B32B** *5/00*

U.S. Cl. 156—72 **9 Claims**



1. A process for manufacturing a photothermal converter element comprising

(A) providing a baseplate element,

(B) coating the baseplate element with a solidifiable adhesive which is adapted for absorbing incident photon energy,

(C) supplying bundles of fibers transparent to photon energy and of a predetermined length,

(D) downwardly passing an array of fiber bundles substantially parallel to each other through guide holes to a desired level above the baseplate element,

(E) allowing the fibers to freefall from the desired level above the baseplate element and to spread transversely from the bundles a preselected distance such that the fibers distribute substantially uniformly on the baseplate element and make adherent contact with the adhesive, and

(F) solidifying the adhesive to firmly attach the fibers to the baseplate element.

4,375,381

TWO PIECE EXTRUDED HOSE

Lennart L. Carlson, Irvine, and Douglas I. Hoiberg, San Clemente, both of Calif., assignors to Steward Plastics, Inc., Laguna Hills, Calif.

Division of Ser. No. 166,344, Jul. 7, 1979, Pat. No. 4,337,800. This application Sep. 28, 1981, Ser. No. 305,968

Int. Cl.³ B65H *81/00;* **B29C** *19/00*

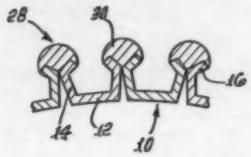
U.S. Cl. 156—195 **3 Claims**

1. A method of manufacturing a flexible plastic hose including the steps of:

extruding a plastic strip having flanges extending substantially at right angles to a flat web, and legs extending from the ends of the flanges and at an angle to the flange in a converging fashion;

cooling said strip;

winding said strip into a multiturn helix with the flanges of succeeding turns arranged in contiguous pairs and extended radially outward, with the legs of the contiguous



pairs of flanges forming a helical groove between the legs; and

extruding a molten plastic bead into said groove bonding said bead directly to each of the legs forming the groove without overlying the flanges, with said molten bead forming the outer surface of said hose.

4,375,382

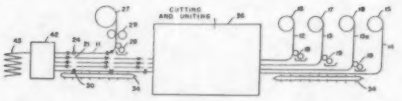
METHOD OF MAKING A CONTINUOUS WEB FORM AND PRODUCT, PARTICULARLY ONE SUITABLE FOR AIRLINE TICKETING

Donald J. Steidinger, Barrington, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Division of Ser. No. 98,992, Nov. 30, 1979, Pat. No. 4,311,325, Continuation-in-part of Ser. No. 914,381, Jun. 12, 1978, Pat. No. 4,208,066, Continuation-in-part of Ser. No. 483,952, Jun. 28, 1974, Pat. No. 4,109,936, Continuation-in-part of Ser. No. 453,556, Mar. 21, 1974, abandoned, which is a continuation of Ser. No. 374,274, Jun. 27, 1973, abandoned. This application Sep. 3, 1981, Ser. No. 299,041

Int. Cl.³ B41L *1/22, 1/26*

U.S. Cl. 156—265 **9 Claims**



1. A method of making a form suitable for airline ticketing and the like comprising advancing a plurality of superposed webs in a predetermined path, said ply plurality ultimately becoming at least a part of the interior plies of said form, sequentially severing said ply plurality along equally longitudinally spaced apart transverse lines to provide a sequence of packets, introducing a bottom ply into said path at a speed greater than the speed of advance of said ply plurality and uniting said ply plurality to said bottom ply to provide a continuous form wherein packets of said plurality of plies are positioned in longitudinally spaced apart relation on said bottom ply, and thereafter zig-zag folding said bottom ply between at least some of the adjacent packets.

4,375,383

HIGH SPEED COLD ADHESIVE CURING PROCESS AND APPARATUS THEREFOR

Peter C. Sewell, 4490 Blenheim, Vancouver, B. C., and Gregory E. Rundle, 22 - 11491 - 7th Ave., Richmond, B. C., both of Canada

Filed Apr. 17, 1981, Ser. No. 255,336

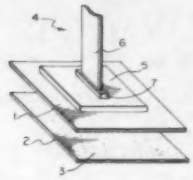
Int. Cl.³ B32B *7/14*

U.S. Cl. 156—291 **6 Claims**

1. A process for rapidly adhering two fibrous surfaces to-

gether in a case erecting and sealing process by means of a liquid cold cure adhesive comprising:

(a) spraying liquid cold cure adhesive on the interface surface of at least one of the fibrous surfaces in a thin discrete particle pattern;



(b) pressing the two fibrous surfaces together under high pressure sufficient to cause the solvent carrier in the cold cure adhesive to disperse into the interstices of the fibres of the two surfaces and curing the cold cure adhesive in the absence of heat, thereby enabling the cold cure adhesive particles to rapidly secure the two surfaces together.

4,375,384

METHOD FOR PENETRANT INSPECTION EMPLOYING AN ETCHANT PENETRANT

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 8, 1982, Ser. No. 355,402

Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—626 **15 Claims**

1. A method for detecting cracks and surface discontinuities in an object which comprises applying to the surface of an object having a ground surface and smeared metal, an etchant penetrant solution capable of removing said smeared metal from adjacent the openings of said cracks, cleaning said surface to remove the excess etchant penetrant, and applying to said surface a developer coating containing a fluorescent material, the etchant remaining in the cracks being capable of destroying the fluorescence adjacent the cracks, and viewing the surface under ultraviolet light to reveal black crack indications against a fluorescent background.

4,375,385

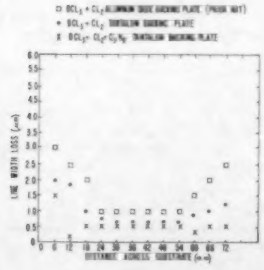
PLASMA ETCHING OF ALUMINUM

Bernard Halon, Brooklyn, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 25, 1982, Ser. No. 362,044

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—643 **9 Claims**



1. In a process of plasma etching a substrate of aluminum or an alloy thereof with an etchant gas containing boron trichloride, the improvement comprising supporting the substrate on a metal getter plate which extends outwardly from the edges of the substrate for a distance sufficient to cause substantially uniform etching across the substrate having improved uniformity.

4,375,386

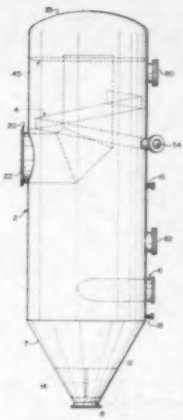
CYCLONIC ENTRAINMENT SEPARATOR FOR EVAPORATOR

Donald M. Windham, Lakeland, Fla., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed May 7, 1981, Ser. No. 261,485

Int. Cl.³ B01D *1/00*

U.S. Cl. 159—31 **24 Claims**



1. In an evaporating apparatus comprising a vessel constructed to contain a pool of vaporizable liquid in the lower part thereof and having a side inlet for supplying make-up liquid to said pool, (b) a first connection for withdrawing liquid from the bottom of said pool and returning it to said pool via said side inlet, (c) a second connection for withdrawing liquid from said pool and passing it to storage or a second evaporator apparatus, and (d) a closed upper and, an entrainment separator comprising (a) a vapor exhaust pipe having a first open upper end within said vessel for receiving vapor evaporated from said pool and a second lower end communicating outside of said vessel, (b) means defining a helical path for conducting vapor evaporated from said pool to said first upper end of said vapor exhaust pipe and separating entrained liquid from said vapor by centrifugal action, and (c) means defining a trough for collecting liquid separated from said vapor.

4,375,387

APPARATUS FOR SEPARATING ORGANIC LIQUID SOLUTES FROM THEIR SOLVENT MIXTURES

Richard P. deFilippi, Cambridge, and J. Edward Vivian, Arlington, both of Mass., assignors to Critical Fluid Systems, Inc., Cambridge, Mass.

Division of Ser. No. 79,935, Sep. 28, 1979, Pat. No. 4,349,415. This application Apr. 27, 1981, Ser. No. 257,764

Int. Cl.³ B01D *3/06, 11/04*

U.S. Cl. 202—169 **13 Claims**

1. An apparatus for separating an organic liquid from an organic liquid/solvent mixture, comprising in combination

(a) pressure vessel means for effecting contact between a mixture of an organic liquid solute and a solvent for said solute and a pressurized extractant fluid which is a solvent for said organic liquid solute but substantially less for said solvent to produce a fluid extract of said organic liquid in said extractant fluid and a raffinate comprising said solvent with minor amounts of said extractant fluid and said

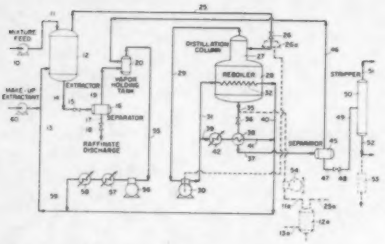
organic liquid solute, said extractant fluid being a gas at ordinary ambient conditions of temperature and pressure;

(b) distillation vessel means capable of separating a still feed into an overhead vapor and liquid bottoms and having associated therewith reboiler means including heat exchange means for circulating a heat transfer fluid therethrough in indirect heat exchange relationship with said liquid bottoms;

(c) first pressure line means arranged for conveying said fluid extract as a still feed from said pressure vessel means to said distillation vessel means;

(d) vapor compressor means;

(e) second pressure line means incorporating said vapor compressor means and arranged for conveying said overhead vapor to said vapor compressor means and recompressed vapor therefrom to said heat exchange means;



(f) still bottom pressure reducing means;

(g) product separator means;

(h) third pressure line means incorporating said still bottom pressure reducing means and arranged for conveying said still bottoms from said reboiler means to said still bottom pressure reducing means and decompressed still bottoms therefrom to said product separator means;

(i) means for recovering said still bottoms from said product separator means as product organic liquid solute;

(j) raffinate separating means for providing a raffinate vapor flash;

(k) vapor flash collection means; and

(l) means disposed for conveying said raffinate vapor flash and solvent vapor flash from said means for recovering said still bottom means for recirculation as said solvent.

4,375,388

APPARATUS FOR FILLING CARBONIZING CHAMBER OF COKE OVEN WITH POWERED COAL WITH VIBRATION APPLIED THERETO

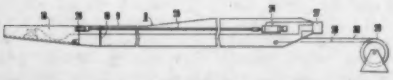
Hisanori Hara; Takafumi Kawamura, both of Kitakyushu; Osamu Takamori, and Wako Ieko, both of Tokai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 199,038, Oct. 20, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 306,935

Claims priority, application Japan, Oct. 23, 1979, 54-136785; Aug. 14, 1980, 55-112111; Sep. 11, 1980, 55-126304; Sep. 11, 1980, 55-126306; Sep. 11, 1980, 55-126307

Int. Cl.³ C10B *37/02, 37/04*

U.S. Cl. 202—239 **7 Claims**



1. An apparatus for filling the carbonizing chamber of a coke oven with powdered coal and for applying vibration thereto, said apparatus comprising:

a beam body arranged and constructed to be movable into and out of a carbonizing chamber of a coke oven, throughout the entire length of the carbonizing chamber, in contact with the surface of powdered coal after the carbonizing chamber is charged with the powdered coal and after the surface of the powdered coal is leveled;

a vibrating member pivotally connected at least to the fore end of said beam body to be bendable relative to said beam body, said vibrating member including a pressing and vibrating face for contacting the surface of the powdered coal and a pull-up arm;

pull-up driving means, attached to the rear end of said beam body and operatively connected to said pull-up arm, for enabling said vibrating member to bend relative to said beam body; and

vibrating means attached to said vibrator member to vibrate the same and thereby apply vibrations to the surface of the powdered coal.

4,375,389

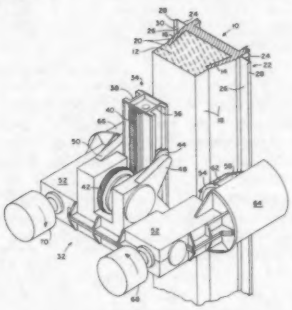
COKE OVEN DOOR CLEANER

Carl Lindgren, Glenshaw, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sep. 2, 1981, Ser. No. 298,645

Int. Cl.³ B23D *79/04, 79/06;* C10B *43/04*

U.S. Cl. 202—241 **17 Claims**



1. A self displacing apparatus for removing carbonaceous material from opposite lateral surfaces of a coke oven door comprising:

(a) first and second generally cylindrical cutting drums, each of said cutting drums having a curved peripheral cutting surface which is positionable against the coke oven door;

(b) first and second spaced, parallel through shafts, respectively coaxial with and connected end to end to the first and second cutting drums so as to transmit rotational motion to said cutting drums;

(c) means for rotating said first and second through shafts and their attached cutting drums about their longitudinal axes so as to effect the removal of carbonaceous material from the coke oven door;

(d) a common shaft perpendicularly interposed between the first and second parallel through shafts;

(e) means for transmitting rotational motion between the first and second parallel through shafts and said common shaft;

(f) rotational output means for displacing the apparatus on a vertical support; and

(g) means for transmitting and reducing the rate of rotational motion between the common shaft and said rotational output means, such that the apparatus is vertically displaced at a rate which is proportional to the rate at which

carbonaceous material is removed from the coke oven door.

4,375,390

THIN FILM TECHNIQUES FOR FABRICATING NARROW TRACK FERRITE HEADS

Nathaniel C. Anderson, P.O. Box 157 (Section 11, New Haven Township), Pine Island, Minn. 55963; Larry E. Daby, 3314 Vist View Ct., SW., Rochester, Minn. 55901; Vincent D. Gravdahl, 1811 Cascade St., NW., Rochester, Minn. 55901; Patrick M. McCaffrey, 1914 W. Center St., Rochester, Minn. 55901; Bruce A. Murray, 3135 Crescent La., Rochester, Minn. 55901, and Bruce W. Wright, Rte. 1, Box 26, Oronoco, Minn. 55960

Filed Mar. 15, 1982, Ser. No. 357,947

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—15 **10 Claims**

1. A process for producing a reactive ion etched structure with height and width dimensions of the order of 25 microns or less on a ferrite substrate surface comprising the steps of

depositing an electrically conductive layer on the substrate surface,

forming a mask of positive photoresist on said conductive layer,

plating said conductive layer exposed by said mask with one of the group consisting of nickel and nickel-iron alloys,

removing said photoresist mask to leave a pattern of said plated metal,

reactive-ion etching the ferrite substrate surface that is exposed by said pattern with a power of >1 watts/cm^2 of cathode area and a bias voltage <-100 volts, and

removing said metal pattern to leave said etched structure.

4,375,391

METHOD FOR MANUFACTURING BICOLORED POLYHEDRAL BODY OF ALUMINUM

Hachiro Kushida, Sayama; Tsuneji Takasugi, Hanno, and Kenji Irie, Yokohamashi, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,176

Claims priority, application Japan, Feb. 27, 1980, 55-23522

Int. Cl.³ C25D *11/12, 11/22*

U.S. Cl. 204—35 N **4 Claims**

1. A method for manufacturing a bicolored polyhedral body which comprises the steps of

(a) anodically oxidizing the surface of the aluminum body in an electrolyte bath by the application of an electric voltage in the range from 30 to 40 volts to form an oxide film on the surface,

(b) coloring the oxide film on the surface of the aluminum body in a first tone color,

(c) subjecting the thus anodized and colored surface of the aluminum body to a first sealing treatment,

(d) mechanically removing the oxide film on the surface of the aluminum body from a part of the polyhedral faces of the body to expose the bare surface of aluminum,

(e) activating the thus exposed bare surface of aluminum by bringing the exposed bare surface of aluminum into contact with an aqueous acid solution selected from the group consisting of an aqueous sulfuric acid solution in a concentration of from 20% to 50% by weight or an aqueous nitric acid solution in a concentration of from 5% to 40% by weight,

(f) anodically oxidizing the thus exposed and activated bare surface of aluminum in an electrolyte bath containing at least one organic acid by the application of an electric voltage in the range from 50 to 80 volts to form an oxide film on the bare surface of aluminum,

(g) coloring the oxide film on the surface of the aluminum body formed in the step (f) above of the second anodization in a second tone color, and

(h) subjecting the surface thus anodized and colored in a second tone color to a second sealing treatment.

4,375,392

BATH AND PROCESS FOR THE ELECTRODEPOSITION OF RUTHENIUM

Kenneth D. Baker, Bridgewater, and Yvonne Rymwid, West Paterson, both of N.J., assignors to Occidental Chemical Corporation, Warren, Mich.

Filed Jun. 2, 1981, Ser. No. 269,444

Int. Cl.³ C25D *3/50, 3/56*

U.S. Cl. 204—43 N **13 Claims**

1. An aqueous electroplating bath for depositing ruthenium metal on various substrates which comprises a complex of ruthenium and sulphamic acid which contains from four to ten moles of sulphamic acid per mole of ruthenium, which complex is present in amount at least sufficient to deposit ruthenium on the substrate to be plated up to the maximum solubility of the complex in the bath; and a second metal component selected from nickel, cobalt, iron, tin, lead and magnesium, which second metal is present in the bath in amounts sufficient to produce a crack-free ruthenium metal deposit; said bath having a pH of from about 0.1 to 2.4.

4,375,393

PREPARATION OF DIACETONE-KETOGULONIC ACID

Fritz Reiff; Willi Wintermeyer, both of Seeheim-Jugenheim; Rolf Wittmann, Mühltal-Traisa; Jürgen Butzke, Dieburg, and Peter Müller, Darmstadt-Arheilgen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed May 26, 1981, Ser. No. 266,786

Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020104

Int. Cl.³ C25B *3/02*

U.S. Cl. 204—79 **8 Claims**

1. A process for preparing diacetone-ketogulonic acid comprising oxidizing diacetonesorbose to diacetone-ketogulonic acid to an extent of about 30–95% by electrochemical oxidation or O_2 oxidation; electrodialysing the resultant reaction solution to separate the diacetone-ketogulonic acid from the unoxidized diacetonesorbose; and recycling the unoxidized diacetonesorbose to the oxidation step.

4,375,394

ELECTROLYTIC PROCESS FOR THE PREPARATION OF ETHYLENE GLYCOL AND GLYCERINE

Thomas J. Devon, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 11, 1982, Ser. No. 356,992

Int. Cl.³ C25B *3/00*

U.S. Cl. 204—79 **6 Claims**

1. A process for the production of ethylene glycol and glycerine which comprises (a) electrolyzing a carbohydrate-derived polyol in the presence of an electrolysis medium comprising manganese, and (b) reducing the intermediate products to ethylene glycol and glycerine.

4,375,395

PROCESS FOR PRODUCING OZONE

Peter C. Foller, 220 J Red Oak W., Sunnyvale, Calif. 94086; Mark L. Goodwin, 17165 Buena Vista, Los Gatos, Calif. 95030, and Charles W. Tobias, 524 Moraga Way, Orinda, Calif. 94563

Filed May 21, 1981, Ser. No. 263,155
Int. Cl.³ C25B *1/00, 1/04*
U.S. Cl. 204—129 2 Claims

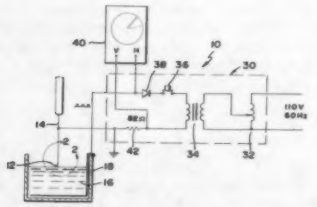
1. A method for producing ozone at high current efficiencies from an electrolytic cell comprising passing an electric current at high oxygen overvoltages through a bare glassy carbon anode and a cathode into an electrolyte comprising a strongly acidic aqueous solution of highly electronegative BF_4^- fluoroanions.

4,375,396

THIN WIRE POINTING METHOD

James M. Beggs, Administrator of National Aeronautics and Space Administration, with respect to an invention of; Gordon Green, and Robert J. Mattauch, both of Charlottesville, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 17, 1981, Ser. No. 322,316
Int. Cl.³ C25F *3/02*
U.S. Cl. 204—129.55 7 Claims



1. A method for pointing phosphor bronze wire comprising:
dipping an end portion of a wire to be pointed in an electrolyte, and passing current between said wire end portion and said electrolyte;
said wire formed of phosphor bronze, and said electrolyte consisting substantially of sulfamic acid diluted in water.

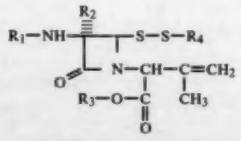
4,375,397

PROCESS FOR PREPARING 3-METHYLENE CEPHALOSPORINS

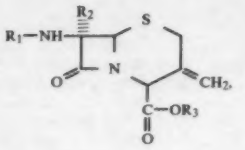
Eric M. Gordon, West Trenton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 15, 1976, Ser. No. 666,989
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—158 R 4 Claims

1. A process for the conversion of an azetidin-2-one derivative having the formula



to a 3-methylenecepham having the formula



which comprises the photolytic conversion of the azetidin-2-one derivative to the 3-methylenecepham by exposing the azetidin-2-one derivative to a light source emitting light of a wavelength that the azetidin-2-one derivative absorbs; wherein R_1 is acyl, R_2 is hydrogen or α-methoxy, R_3 is hydrogen, alkyl, 2,2,2-trichloroethyl, trimethylsilyl, diphenylmethyl, benzyl, 4-methoxybenzyl, or 4-nitrobenzyl, and R_4 is an aromatic heterocyclic group.

4,375,398

ELECTRON BEAM SENSITIVE RESIST OF AN ANHYDRIDE COPOLYMER

Donald H. Lorenz, Basking Ridge, N.J., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 357,381, Mar. 12, 1982, abandoned, which is a continuation of Ser. No. 249,991, Apr. 15, 1980, abandoned. This application May 24, 1982, Ser. No. 381,287
Int. Cl.³ C08F *265/02*; C08L *35/08*
U.S. Cl. 204—159.15 32 Claims

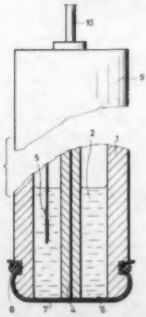
1. A high sensitivity electron beam resist polymer which is the mixed half-ester reaction product of a reaction between an alkyl vinyl ether-maleic anhydride copolymer with a terminally unsaturated alcohol and a compound selected from the group consisting of N-hydroxyalkyl amides and N-aminoalkyl amides.

4,375,399

MOLECULE SELECTIVE SENSOR FOR INDUSTRIAL USE AND PROCEDURE FOR ITS PREPARATION

Jeno Havas; Geza Nagy; Emma Porjesz, and Erno Pungor, all of Budapest, Hungary, assignors to Radelkis Elektrokemiai Miszergyarto Szövetkezet, Budapest, Hungary

Continuation of Ser. No. 49,334, Jun. 18, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,102
Claims priority, application Hungary, Sep. 8, 1978, RA 688
Int. Cl.³ C12Q *1/00, 1/14*
U.S. Cl. 204—195 B 5 Claims



1. A process for producing an enzymatically active membrane which consists in mixing together 1–20 weight percent of acrylamide, 1–20 weight percent of polyvinylalcohol, 0.01–10 weight percent of bovine albumin, 0.0001–5 weight percent of

an enzyme, 0.1–5 weight percent of glutaric aldehyde, a polymerization initiating amount of potassium persulfate and the remainder to 100 weight percent of distilled water, spreading the mixture on a protein membrane found in nature to form a thin sheet and allowing the mixture to react for 12 hours at room temperature.

3. A hollow molecule-selective sensor having a sensing electrode and a reference electrode and two permeable membranes in contacting relationship with each other, one of said membranes being a protein membrane found in nature and the other of said membranes being a self-supporting enzymatically active membrane prepared according to the process of claim 1.

4,375,400

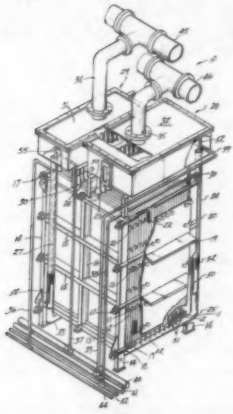
ELECTROLYTE CIRCULATION IN AN ELECTROLYTIC CELL

Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 213,801, Dec. 8, 1980, Pat. No. 4,339,321. This application Apr. 3, 1981, Ser. No. 250,981

Int. Cl.³ C25B *9/00, 15/08*

U.S. Cl. 204—237 **16 Claims**



1. In a filter press membrane chloralkali electrolytic cell containing electrolyte fluid connectable to a source of electrical energy utilized to energize the electrolytic reaction therein, the combination comprising:

(a) frame means to support the cell;

(b) a plurality of planar cathodes supported by the frame means, each cathode further having two opposing surfaces, a top and a bottom;

(c) a plurality of planar anodes supported by the frame means, each anode being sandwiched between a pair of cathodes and having two opposing surfaces, a top and a bottom;

(d) a plurality of planar hydraulically impermeable ion-selective membranes positioned between each anode and cathodes to control the flow of ions and fluid thereacross;

(e) a catholyte disengager external to each cathode and in fluid flow communication therewith at least partially supported by the frame means for the separation of gas from the catholyte fluid contained therein;

(f) an anolyte disengager external to each anode and in fluid flow communication therewith at least partially supported by the frame means for the separation of gas from the electrolyte fluid contained therein;

(g) an anolyte return conduit of predetermined length external of the anodes in fluid flow communication with the anolyte disengager and the individual anodes, the anolyte return conduit having a first predetermined cross-sectional area through which electrolyte fluid flows to recirculate electrolyte from the anolyte disengager to the anodes;

(h) a catholyte return conduit of predetermined length external of the cathodes in fluid flow communication with the catholyte disengager, the catholyte return conduit having a second predetermined cross-sectional area through which catholyte fluid flows to recirculate fluids from the catholyte disengager to the cathodes;

(i) anolyte outlet means having a first portion joined at a junction with a second portion, the first portion extending from the anolyte disengager into the anolyte return conduit a first predetermined distance and the second portion exiting the anolyte disengager; and

(j) feed means for replenishing electrolyte fluid connected to the anolyte return conduit and external to the anolyte disengager to provide a flow of fresh electrolyte to the cell, the means extending a second predetermined distance greater than the first predetermined distance into the anolyte return conduit and having a third predetermined cross-sectional area substantially less than the first predetermined cross-sectional area such that the outlet of the flow of fresh electrolyte is into the flow of recirculated electrolyte within the anolyte return conduit to effect thorough mixing of the fluids prior to entering each anode and to decrease the leakage of electrical energy therethrough.

4,375,401

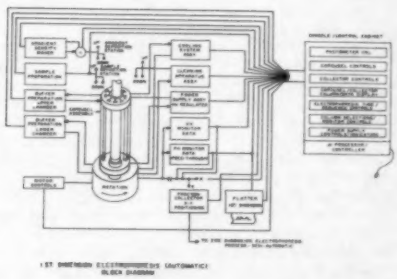
ELECTROPHORESIS SYSTEM

Nicholas Catsimpoolas, 65 Montvale Rd., Newton Center, Mass. 02159

Filed May 20, 1981, Ser. No. 265,425

Int. Cl.³ B01D *13/02;* **G01N** *27/28*

U.S. Cl. 204—301 **18 Claims**



1. An integrated electrophoresis system which comprises in combination

A. a first dimensional electrophoresis sub-system comprising in combination

(i) carousel means containing a multiplicity of electrophoresis columns rotatable circularly through a multiplicity of stations wherein one or more of said stations is associated with functions consisting of electrophoresis medium deposition, sample deposition, electrophoresis, electrophoresis medium evacuation, and column washing and drying;

(ii) electrophoresis medium deposition means, said means being in operative fluid flow relationship with each of said electrophoresis column which is positioned in said electrophoresis medium deposition station whereby electrophoresis medium is provided to each such column;

(iii) sample deposition means, said means being in operative fluid flow relationship with each of said electrophoresis columns which is positioned in said sample deposition station whereby individual samples are provided to the top of the electrophoresis medium in each said column;

(iv) electrophoresis means comprising power supply means, electrode means and electrical connector means whereby

said electrode means are in ionic contact with said electrophoresis medium in each column and said electrical connector means provides continuous electrical connection between said power supply means, and said electrode means while said column is passing between said electrophoresis stations so as to provide a voltage potential across said electrophoresis medium suitable for carrying out electrophoretic separations;

(v) electrophoresis medium monitoring means, said means being in operative fluid flow relationship with said electrophoresis medium evacuation station whereby the electrophoresis medium after completion of the electrophoresis is removed from said carousel and is monitored for location of desired sample by measurement of one or more selected parameters;

(vi) column washing and drying means, said means being in fluid flow relationship with said column washing and drying station whereby each column in such station after evacuation of electrophoresis medium is cleaned and prepared for electrophoresis medium deposition at the initial station of the next cycle;

(vii) fraction collection means, said means being in operative fluid flow relationship with said electrophoresis medium monitoring means whereby said monitored electrophoresis medium is divided into multiple selected discrete fractions and said fraction collection means containing a sample holder means so arranged and constructed as to serve as a sample holder and applicator means for the second dimensional electrophoresis; and

(viii) cooling fluid means, said means being in operative fluid flow relationship with cooling columns which surround each of said electrophoresis columns in said carousel whereby cooling fluid is provided to said cooling columns throughout the entire rotational cycle of said carousel to thereby remove the heat generated by said electrophoresis;

B. a second dimensional electrophoresis sub-system comprising in combination;

(i) slab gel holder tank means so arranged and constructed as to be capable of supporting a multiplicity of slab gels suitable for gel electrophoresis, said slab gels being maintained in a position allowing for sample administration employing said sample holder means from the said first dimensional fraction collector means whereby the discrete fractions collected from said first dimensional electrophoresis are applied to said slab gels;

(ii) power supply means, said means being in electrical contact with said slab gel holder tank means whereby a potential suitable for carrying out gel electrophoresis is established across said gels; and

(iii) cooling fluid means, said means being in operative fluid flow relationship with said slab gel holder tank means whereby heat generated by said gel electrophoresis is removed;

C. microprocessor control means, said means being in operative electrical contact with the components of each said sub-system so as to provide operative process control over such sub-systems.

4,375,402

PYROLYSIS PROCESS

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

PCT No. PCT/US81/01052, § 371 Date Aug. 25, 1981, § 102(e) Date Aug. 25, 1981, PCT Pub. No. WO82/00655, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 6, 1981, Ser. No. 295,891

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 R **21 Claims**

1. A continuous process for producing condensed stabilized hydrocarbons from a solid particulate carbonaceous material comprising:

(a) heating a solid particulate carbonaceous material in a pyrolysis zone with a solid particulate source of heat to a first temperature between about 900° and about 2000° F. for a period of time between about 0.5 seconds to about 2 hours to produce from said solid carbonaceous material a pyrolysis product comprising particulate product solids and pyrolytic product vapors which comprise hydrocarbons which comprise newly formed volatilized hydrocarbon free radicals, a portion of said hydrocarbons containing larger hydrocarbons, said larger hydrocarbons being all the hydrocarbon vapors in said pyrolytic product vapors containing four or more carbon atoms, a portion of said hydrocarbons comprising a product agent suitable for use as a capping agent either directly or after hydrotreatment of said product agent;

(b) separating solids which comprise said particulate product solids and said solid particulate source of heat from a gaseous mixture which comprises said pyrolytic product vapor to form a substantially solids-free gaseous mixture stream;

(c) contacting said substantially solids-free gaseous mixture stream with a quench fluid comprising a capping agent suitable for stabilizing said newly formed volatilized hydrocarbon free radicals, under predetermined conditions of temperature and flow rate of capping agent sufficient for substantially simultaneously stabilizing at least a major portion of said newly formed volatilized hydrocarbon free radicals by the transfer of hydrogen from said capping agent to said newly formed volatilized hydrocarbon free radicals, and substantially simultaneously condensing at least a major portion of said larger hydrocarbons, thereby forming a gaseous residue and a liquid mixture comprising condensed stabilized hydrocarbons, a hydrogen depleted capping agent, and said product agent;

(d) separating said liquid mixture from said gaseous residue;

(e) introducing said separated solids and a gas comprising molecular oxygen into one end of a transfer line combustion zone under conditions sufficient to heat said separated solids to a second temperature between about 925° to about 2100° F., said second temperature being higher than said first temperature, thereby producing heated solids;

(f) introducing said heated solids from said transfer line combustion zone into said pyrolysis zone as said solid particulate source of heat;

(g) separating said liquid mixture, after separation from said gaseous residue, in a distillation zone into a light oil stream, a medium oil stream, and a heavy oil stream;

(h) hydrogenating at least a portion of said medium oil stream thusly separated in said distillation zone to product hydrogenated medium oil comprising a hydrogenated capping agent suitable for stabilizing said newly formed volatilized hydrocarbon free radicals, at least a major portion of said hydrogenated capping agent being produced from said product agent;

(i) utilizing said hydrogenated medium oil as at least a major portion of said capping agent contained in said quench fluid used for contacting said substantially solids-free gaseous mixture stream; and

(j) recovering said light oil stream and said heavy oil stream at least one of which comprises condensed stabilized hydrocarbons.

4,375,403

SOLVENT DEWAXING PROCESS

Charles W. Harrison, Houston; Herbert J. Pitman, Nederland; Avilino Sequeira, Jr., Port Arthur, and John D. Begnaud, Kingwood, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

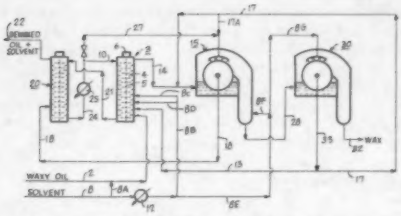
Filed Jan. 18, 1982, Ser. No. 340,436

Int. Cl.³ C10G *21/00, 21/02*

U.S. Cl. 208—33 **12 Claims**

1. In a process for dewaxing a waxy lubricating oil stock by cooling said stock in the presence of a dewaxing solvent to a temperature effective for the removal of wax therefrom by filtration the improvement which comprises introducing said

oil stock into a chilling zone into countercurrent liquid-liquid contact with a chilled immiscible heat exchange liquid, separating said heat exchange liquid from resulting chilled oil stock, introducing dewaxing solvent into admixture with said chilled oil stock at substantially dewaxing temperature, separating by filtration solidified wax from resulting dewaxed oil and solvent, recovering a mixture of solvent and oil of diminished wax content from said filtration step, and passing said dewaxed



oil/solvent mixture at substantially said dewaxing temperature into intimate countercurrent liquid-liquid contact with immiscible liquid coolant from said cooling zone thereby chilling said heat exchange liquid for reuse in said cooling zone and warming said mixture of dewaxed oil and solvent, separating said warmed dewaxed oil and solvent from said heat exchange liquid, chilling said heat exchange liquid to substantially dewaxing temperature and reintroducing said chilled heat exchange liquid into said cooling zone.

4,375,404

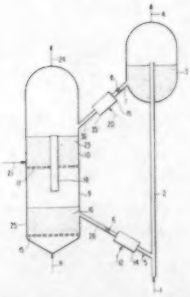
ADDITION OF CHLORINE TO REGENERATOR

George D. Myers, deceased, late of Ashland, Ky. (by Virginia K. Myers, administratrix), assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 94,092, Nov. 14, 1979, Pat. No. 4,332,673, and Ser. No. 94,216, Nov. 14, 1979, Pat. No. 4,341,624. This application Mar. 23, 1981, Ser. No. 246,782

Int. Cl.³ C10G *11/05, 11/08*

U.S. Cl. 208—120 **53 Claims**



1. A process for economically converting carbo-metallic oils to lighter products comprising:

I. providing a converter feed containing 650° F.+ material, said 650° F.+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);

II. bringing said converter feed together with particulate cracking catalyst to form a stream comprising a suspension of said catalyst in said feed and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a predetermined vapor riser residence time in the range of about 0.5 to about 10 seconds at a temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;

III. separating spent, coke-laden catalyst from the stream of hydrocarbons formed by vaporized feed and resultant cracking products;

IV. maintaining, in one or more regeneration zones, one or more fluidized catalyst regeneration beds comprising spent catalyst undergoing regeneration by combustion of the coke with oxygen on the spent catalyst, and supplying additional spent catalyst to one or more of such fluidized regeneration bed or beds;

V. retaining said catalyst particles in said regeneration zone or zones in contact with a flow of said combustion-supporting gas under conditions of temperature, atmosphere and average total residence time in said zone or zones sufficient for combustion of the coke on the catalyst and for reducing the level of carbon on the catalyst to about 0.25% by weight or less, while forming gaseous combustion product gases comprising CO and CO_2;

VI. adding chlorine to the gases within at least one regeneration zone in a concentration high enough to increase the CO/CO_2 ratio; and recycling the regenerated catalyst to the reactor for contact with fresh feed.

4,375,405

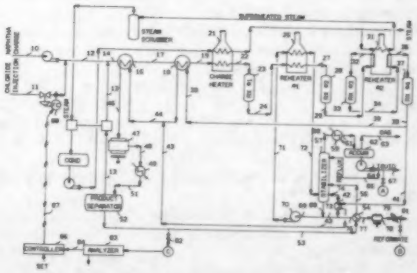
REFORMER CONTROL

Robert M. Garvert, Great Falls, Mont., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 24, 1980, Ser. No. 200,288

Int. Cl.³ C10G *35/04*

U.S. Cl. 208—134 **8 Claims**



1. Reformer control process comprising

a. automatically determining the isopentane content of a reformer product,

b. generating an isopentane signal responsive to this determination,

c. manipulating the addition of halogen to the reformer responsive to said isopentane signal in such a way as to increase (decrease) halogen addition responsive to a decrease (increase) in isopentane content.

4,375,406

FIBROUS CLAY COMPOSITIONS CONTAINING PRECALCINED OXIDES

Donald S. Santilli, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 21, 1981, Ser. No. 227,001
Int. Cl.³ C10G *17/00*
U.S. Cl. 208—251 H 14 Claims

1. A process for hydroprocessing a hydrocarbonaceous feedstock comprising:

contacting said feedstock with hydrogen in the presence of hydrogen under hydroprocessing conditions in the presence of a composition of matter prepared by the method of:

(a) forming a fluid suspension comprising rods of fibrous form clay, particles comprising precalcined inorganic oxide, and a fluid suspension medium;

(b) agitating the fluid suspension to form a codispersion of the rods and said precalcined particles;

(c) shaping the codispersion to form a shaped body; and

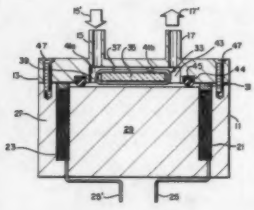
(d) drying and calcining the shaped body.

4,375,407

HIGH GRADIENT MAGNETIC SEPARATION DEVICE

Paul L. Kronick, Haverford, Pa., assignor to The Franklin Institute, Philadelphia, Pa.

Filed Jun. 22, 1981, Ser. No. 275,905
Int. Cl.³ B03C *1/02*
U.S. Cl. 209—8 7 Claims



1. A high gradient magnetic separation device comprising a chamber having an inlet and a discharge port through which the materials to be separated are passed, said chamber containing a matrix of ferromagnetic filamentary material, and magnetic means disposed in association with said chamber for applying a magnetic field to said matrix of ferromagnetic filamentary material, wherein the improvement comprises providing said matrix of ferromagnetic filamentary material with a coating of a hydrogel polymer.

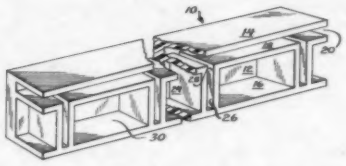
4,375,408

ELASTOMERIC FRAMING MEMBER FOR SCREEN DECK PANEL

Thomas A. Anderson, Vadnais Heights, Minn., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 5, 1981, Ser. No. 290,121
Int. Cl.³ B07B *1/46*
U.S. Cl. 209—405 6 Claims

1. A molded elastomeric framing member which is adapted to receive a side edge portion of a flat deck metal screen panel which has a generally horizontal top surface formed of a plurality of parallel, longitudinally extending profiled wires welded to a plurality of transversely extending, generally vertically oriented support bars, said framing member comprising an elongated, elastomeric, channel-like molded member having a top wall, a bottom wall and a connecting outer rear wall, said member having a generally rectangular cross-section, parallel, continuous top and bottom surfaces, and a generally planar and continuous outer side surface on said rear wall, the inner side surface of said member being slotted to form an elongated, continuous horizontal slot parallel to the top surface and a plurality of vertical slots which are widely spaced relative to their width, and which extend downwardly from said continuous slot and are in intersecting relation thereto, said vertical slots having their lower ends spaced from the bottom surface of said framing member by the thickness of said bottom wall, said elongated, continuous slot having its top defined by said top wall and being sized so that it is adapted to receive a plurality of the profiled wires at the side edge of a flat deck screen panel, said vertical slots being sized so that they are adapted to receive portions of one end of all of the vertical support bars on a side edge of a flat deck screen panel, each of said plurality of vertical slots being defined on its sides by a



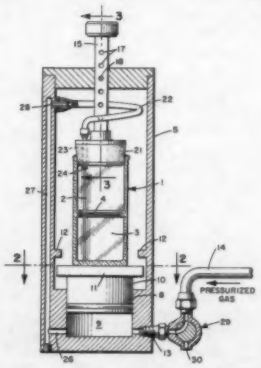
pair of vertical wall portions extending from and integral with the bottom wall of the framing member, the outer rear wall of the framing member, and the wall portion of the framing member which defines the bottom of the continuous horizontal slot, said vertical slots being spaced sufficiently far apart that open recesses formed in said inner side surface in the space between the adjacent vertical wall portions of adjacent vertical slots have a horizontal width substantially greater than the width of the vertical wall portions, the top and bottom surfaces of said framing member being adapted to be engaged by clamping and support portions of a vibrating screen apparatus so as to prevent metal-to-metal contact between said screen apparatus and said screen panel.

4,375,409

FILTRATION APPARATUS

Glenn A. Gentry, 216 Ashcot Cir., Jackson, Miss. 39211

Filed Apr. 6, 1979, Ser. No. 27,947
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—232 13 Claims



1. Filtration apparatus comprising housing means; a filtration unit having an upper material receiving chamber, a filter, and a lower filtrate receiving chamber,

adjustable support means disposed within said housing to support said filtration unit in an upright position;

closure means mounted within said housing for sealing said filtration unit;

gas pressure generating means comprising means to supply gas under pressure into the upper chamber of said filtration unit to drive the material to be filtered through the filter into the filtrate receiving chamber and means to create a gas pressured sealing force on said closure means greater than the back force generated within the filtration unit on said closure means by the gas introduced into the filtration unit.

4,375,410

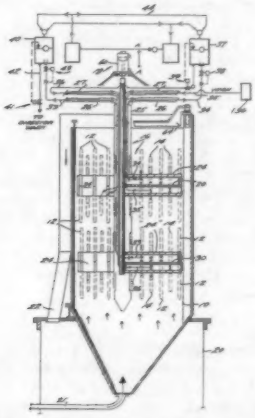
RECIPROCATING DIFFUSER ARRANGEMENTS IN AN ELONGATED VESSEL

Johan C. F. C. Richter, St. Jean Cap Ferrat, France, and Ole J. Richter, Karlstad, Sweden, assignors to Kamyr AB, Karlstad, Sweden

Division of Ser. No. 34,928, Apr. 25, 1979, Pat. No. 4,276,167. This application Dec. 4, 1980, Ser. No. 213,101

Int. Cl.³ B01D *33/00*

U.S. Cl. 210—323.2 **10 Claims**



1. In an elongated upright hollow vessel the combination comprising:

a plurality of withdrawal screens extending substantially parallel to the vessel direction of elongation and spaced from each other in directions perpendicular to the vessel direction of elongation, said screens disposed in at least two screen sets, one above the other with the screens of each screen set parallel to the screens of each other set;

a plurality of fluid introducing structures extending substantially parallel to the vessel direction of elongation and spaced from each other in directions perpendicular to the vessel direction of elongation, said structures introducing fluid out of the sides thereof, and disposed in sets corresponding to said withdrawal screen sets;

conduit means, including a central tubular portion extending in the direction of elongation of the vessel, for supporting said withdrawal screens and said fluid introducing structures of each set so that the screens and structures are interspersed with each other and stationary with respect to each other, and said conduit means being in fluid communication with said screens and said fluid introducing structures and said conduit means including a final passage means for each set for providing passage of fluid from an area remote from said fluid introducing structures through said tubular portion to said fluid introducing structures so that the fluid flows between and into contact with the screens of the same set as the fluid introducing structures, and said conduit means including a second passage means for each set for passage of fluid from said withdrawal screens through said tubular portion to an area remote from said withdrawal screens;

means for simultaneously reciprocating all of said conduit means with attached withdrawal screens and fluid introducing structures of each set in a direction substantially coincident with the direction of elongation of the vessel; and

means for introducing fluent material to be treated into said vessel and into said first passage means and means for withdrawing treated fluent material from said second passage means out of said vessel.

4,375,411

DEVICE FOR LIMITING VORTEX FLOW

Girma Wolde-Michael, Little Canada, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 16, 1981, Ser. No. 254,739

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—512.1 **13 Claims**

10. In a system for separating a heavier liquid and a lighter liquid from a fluid mixture:

a container adapted to receive said fluid mixture comprising walls defining a generally centrally located bottommost outlet opening, said container having a generally circular cross-section and inlet means for introducing a fluid into said container in a manner to create with said outlet opening a fluid vortex, said fluid vortex having a central portion with a rotating surface extending through said fluid to said outlet opening;

means for separating said heavier liquid from said lighter liquid;

means for transferring fluid from said container outlet opening to said separating means;

means for recirculating at least a portion of said fluid back to said container through said container inlet means to maintain said fluid vortex, whereby said lighter liquid being carried upon the surface of the fluid is carried by said central rotating surface to said container outlet opening;

the improvement comprising a vortex generating member having an opening extending therethrough;

and means for supporting said generating member within said container in spaced apart relation to said outlet opening, said supporting means defining a passageway between said member and said outlet opening for flow therethrough of fluid to interrupt said rotating surface of said vortex central portion, said vortex generating member being shaped and configured to regenerate said vortex and allow said rotating surface of said vortex central portion to extend upwardly through said opening in an uninterrupted state.

4,375,412

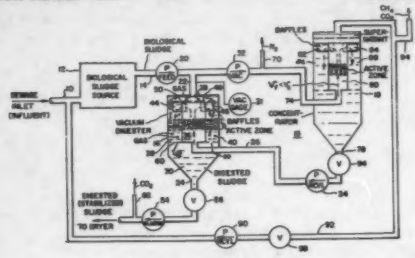
METHODS FOR THE TREATMENT OF ORGANIC MATERIAL AND PARTICULARLY SEWAGE SLUDGE

Keith A. Schimel, 220 Glen Echo Dr., Norfolk, Va. 23505

Continuation-in-part of Ser. No. 3,167, Jan. 15, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,896

Int. Cl.[3] C02F *3/28*

U.S. Cl. 210—603 16 Claims



1. The method for anaerobic digestion of slurries of organic material influents which comprises the steps of anaerobically concentrating and partially digesting said influent material in a concentrator tank at atmospheric pressure while forming a submerged suspension of solids of said material therein, stripping gas resulting from digestion in said submerged suspension in said concentrator tank, introducing the concentrated and partially digested material from said concentrator tank into a vacuum digester tank in a direction to flow through a submerged suspension of active material therein, controlling the flow through said concentrator tank and through said digester tank and between said tanks to maintain the submerged suspension therein, anaerobically digesting said concentrated and partially digested sludge into a stable portion which is substantially mineralized to 80% or more while said submerged suspension of active material is maintained in said vacuum digester tank, and stripping gas resulting from digestion from said submerged suspension of active material in said vacuum digester tank.

15. The method of production of ammonia gas from the digestion of an influent biological sludge which comprises the steps of first anaerobically partially digesting and concentrating said sludge, and then anaerobically digesting said partially digested and concentrated sludge under a pressure which cycles between vacuum and atmospheric or above atmospheric pressure.

4,375,413

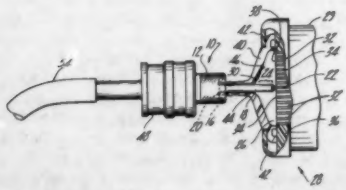
RINSING DEVICE AND METHOD OF RINSING ARTIFICIAL KIDNEYS THEREWITH

Zane H. Geel, Tigard, Oreg., and John Maroney, Lafayette, Calif., assignors to Cordis Dow Corp., Miami, Fla.

Filed Jun. 19, 1981, Ser. No. 275,529

Int. Cl.[3] B01D *31/00, 13/00*

U.S. Cl. 210—636 11 Claims



1. A method for rinsing a blood chamber of an artificial kidney having a dialysate chamber separated by a tubesheet from the blood chamber and also having a plurality of hollow semipermeable fibers extending through the dialysate chamber and tubesheet, the ends of the fibers opening into the blood chamber at a planar face of the tubesheet defining an inner surface of the blood chamber, comprising the steps of

(a) blocking the ingress of rinse liquid into the open ends of said fibers at said planar face,

(b) inserting into said blood chamber means for forcibly spraying rinsing liquid on the inner wall surfaces which define said chamber and on the planar face of said tubesheet, and

(c) spraying rinse liquid from said means on said chamber walls and said tubesheet planar face for a time and under sufficient force to dislodge debris and blood clots from said surfaces and to flush same from said chamber.

4,375,414

IMMUNOLOGICAL METHODS FOR REMOVING SPECIES FROM THE BLOOD CIRCULATORY SYSTEM AND DEVICES THEREFOR

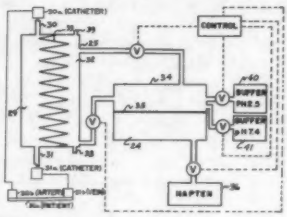
Meir Strahilevitz, 4601 NE. 203 Ct., Seattle, Wash. 98155

Continuation of Ser. No. 255,154, May 19, 1972, abandoned. This application Jan. 21, 1977, Ser. No. 761,290

Claims priority, application United Kingdom, May 20, 1971, 16001/71

Int. Cl.[3] B01D *31/00, 13/00;* A61M *1/03*

U.S. Cl. 210—638 13 Claims



7. An immunological method for extracting from a living mammal a hapten in the blood of said mammal, comprising

(1) connecting in the blood circulatory system of said mammal a hapten-removing device, said device comprising a first chamber and a second chamber; a semipermeable membrane separating said first chamber from said second chamber; inlet means and outlet means for connecting said first chamber in the circulatory system of said mammal; a liquid phase containing antibodies to said hapten in said second chamber, said membrane being permeable to said hapten and being impermeable to said antibodies; and closed regenerative means connected in a fluid circuit with said second chamber, said regenerative means comprising a third chamber,

(2) drawing at least a portion of said liquid phase from said second chamber to said third chamber,

(3) changing the pH of said liquid phase in said third chamber for releasing said antibody from said hapten, and

(4) returning said antibody to said second chamber and preventing said hapten from returning to said second chamber.

4,375,415

DEVICE AND METHOD FOR CONTINUOUSLY FRACTIONATING BLOOD TO PRODUCE PLASMA

Ardis R. Lavender, Clarks Summit, Pa. 18411

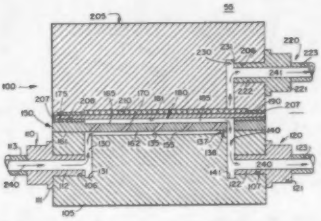
Continuation of Ser. No. 743,593, Nov. 22, 1976, abandoned. This application May 18, 1981, Ser. No. 265,104

Int. Cl.[3] B01D *13/00, 31/00*

U.S. Cl. 210—651 51 Claims

8. Apparatus for continuously fractionating blood comprising a first member having a blood inlet and a blood outlet, a

shallow cavity in one surface of said first member in fluid communication with said blood inlet, a blood inlet manifold in said one surface of said first member intermediate said blood inlet and said shallow cavity having the same dimension transverse to blood flow between said inlet and outlet as said shallow cavity and being substantially deeper than said shallow cavity, a blood outlet manifold in said one surface of said first member having substantially the same dimensions as said blood inlet manifold, a second member having a cavity in one surface thereof in at least partial registry with said shallow cavity in said first member and having a blood fraction outlet in fluid



communication therewith, a semipermeable membrane separating said shallow cavity in said first member from said cavity in said second member and permitting a blood fraction to pass therebetween, and means providing high velocity blood jets directed toward and along one surface of said semipermeable membrane to maintain said membrane sufficiently cake free for passage of the blood fraction therethrough, passage of blood from said blood inlet through said inlet manifold along said membrane to said blood outlet continuously passing the blood fraction through said membrane into said cavity in said second member to said blood fraction outlet.

4,375,416

DETERGENT COMPOSITION HAVING TEXTILE SOFTENING PROPERTIES

Peter N. Crisp, Gateshead; Allan C. McRitchie, Whitley Bay, and John G. Bell, Gosforth, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 94,625, Nov. 15, 1979, abandoned. This application Oct. 16, 1980, Ser. No. 197,439

Claims priority, application United Kingdom, Nov. 20, 1978, 45150/78

Int. Cl.³ C11D *1/40, 1/65;* D06M *11/00, 13/34*

U.S. Cl. 252—8.7 **5 Claims**

1. A textile softening composition consisting essentially of, by weight,

(a) from about 5% to about 20% of anionic organic surfactant;

(b) from about 2% to about 8% of tertiary amine having the formula $R_1R_2R_3N$ wherein R_1 and R_2 are independently selected from C_{10} to C_{26} alkyl and alkenyl groups, and R_3 represents a C_1 to C_7 alkyl group;

(c) from about 1.5% to about 12% of impalpable smectite-type clay having an ion exchange capacity of at least about 50 meq per 100 grams; and

(d) from about 20% to about 60% of one or more water-soluble detergency builder salts; wherein the weight ratio of tertiary amine to smectite-type clay is in the range from about 2:1 to 1:2 and wherein the pH of a 0.5% by weight aqueous solution of the composition is in the range from 8.5 to 11.0; wherein the amine component (b) is disposed on the surface of granules comprising components (a), (c), and (d).

4,375,417

CYLINDER LUBRICATING OIL COMPOSITION

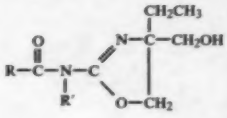
Benjamin H. Zoleski, Beacon; Rodney L. Sung, and William P. Cullen, both of Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 27, 1981, Ser. No. 315,570

Int. Cl.³ C10M *1/40*

U.S. Cl. 252—33.4 **12 Claims**

1. A cylinder lubricating oil composition having a Total Base Number in the range from about 50 to 100 comprising a mineral lubricating oil, from about 10 to 20 weight percent of an overbased calcium sulfonate having a Total Base Number from about 300 to 450, and a friction modifying amount of at least one oxazoline derivative of the formula:



where R is lauryl, $C_{11}H_{23}$, oleyl or stearyl; R′ is hydrogen or (lower) alkyl.

4,375,418

LUBRICATING OIL COMPOSITION

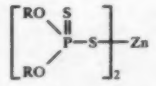
Benjamin H. Zoleski, Beacon; Rodney L. Sung, and William P. Cullen, both of Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,825

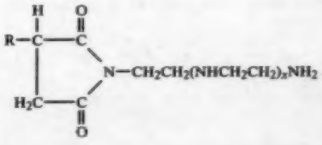
Int. Cl.³ C10M *1/48*

U.S. Cl. 252—33.4 **7 Claims**

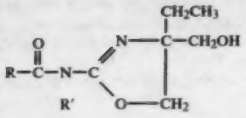
1. A crankcase lubricating oil composition having a Total Base Number in the range from about 5 to 40 comprising a major proportion of a mineral lubricating oil containing from about 0.1 to 5 weight percent of at least one overbased calcium sulfonate, from about 0.1 to 1 weight percent of a zinc dithiophosphate represented by the formula:



in which R is a hydrocarbyl radical or a hydroxy substituted hydrocarbyl radical having from 4 to 12 carbon atoms from about 0.5 to 10 weight percent of nitrogen-containing dispersant represented by the formula:



where R is alkenyl of from 50 to 200 carbons and x is an integer of 0 to 10, from 0.1 to 5 weight percent of an overbased calcium sulfonate sufficient to impart to the composition a Total Base Number of between about 5 and 40; between about 0.3 and 10 weight percent of an ethoxylated inorganic phosphorus acid free steam hydrolyzed NO_2-blown polybutene (800–2500 MW) P_2S_5 reaction product, from about 0.1 and 7.00 weight percent of an overbased sulfurized calcium phenolate and a minor friction reducing amount of at least one acyl glycine oxazoline of the formula:



where R is lauryl, $C_{11}H_{23}$, oleyl or stearyl; R′ is hydrogen or (lower) alkyl.

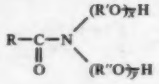
4,375,419

NITROGEN-CONTAINING PRODUCTS OF PHOSPHOSULFURIZED AMIDES AND LUBRICANTS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Clementon, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 14, 1981, Ser. No. 263,535
Int. Cl.³ C10M *1/20, 1/32, 1/44;* **C07G** *17/00*
U.S. Cl. 252—46.7 **23 Claims**

1. A reaction product made by (1) reacting, at from about 50° C. to about 140° C., a phosphorus polysulfide with a hydroxy aliphatic hydrocarbylamide of the formula:



wherein R is a hydrocarbyl group containing 6 to 30 carbon atoms, R′ and R″ are aliphatic groups containing 1 to 6 carbon atoms and x and y are each 1 to 7, using from about 2 to about 12 moles of the hydrocarbylamide per mole of polysulfide, followed by (2) reacting (1), at from about 50° C. to about 120° C., with a stoichiometric amount of a nitrogen-containing compound.

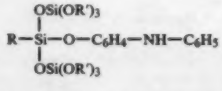
4,375,420

SELECTED 4-HYDROXYPHENYL ANILINO ALKOXYSILANES AND THEIR USE AS ANTIOXIDANTS

Karl O. Knollmueller, Hamden, and Theodore H. Fedynyshyn, Branford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 22, 1982, Ser. No. 350,690
Int. Cl.³ C07F *7/10, 7/18;* **C09K** *5/00*
U.S. Cl. 252—78.3 **13 Claims**

1. A 4-hydroxyphenyl anilino alkoxysilane having the formula



wherein R is hydrogen or a lower alkyl group having from 1 to 4 carbon atoms and each R′ is individually selected from an alkyl group having from 3 to 12 carbon atoms, with the proviso that at least a majority of said R′ radicals are stearically hindered alkyl groups.

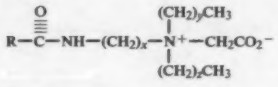
4,375,421

VISCOUS COMPOSITIONS CONTAINING AMIDO BETAINES AND SALTS

Fred K. Rubin, Leonia, and David Van Blarcom, West Milford, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

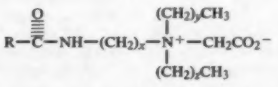
Filed Oct. 19, 1981, Ser. No. 312,439
Int. Cl.³ C11D *1/90, 1/94, 3/04, 17/08*
U.S. Cl. 252—110 **84 Claims**

1. A viscous liquid, paste, or gel composition comprising:
(a) 5 to 25% by weight of one or more amido betaines represented by the formula:



wherein:
(1) R is an alkyl or alkenyl chain containing 9 to 17 carbon atoms;
(2) x is an integer from 2 to 4;
(3) y is an integer from 0 to 3;
(4) z is an integer from 0 to 3;
(b) 5 to 40% by weight of one or more water-soluble inorganic or organic salts, the inorganic salt being selected from the group consisting of:
(1) sulfates of metal from groups Ia, IIa, IIb, and IIIa of the periodic table;
(2) sulfates of non-metallic ions;
(3) alkali metal carbonates.
the organic salt being incapable of forming micelles and being selected from the group consisting of the citrates, tartrates, succinates, and carboxymethyloxysuccinates of metals from Groups IA, IIA, IIB, and IIIA of the periodic table and the citrates, tartrates, succinates and carboxymethyloxysuccinates of ammonium ions.
(c) water to 100%;
the composition having a Brookfield viscosity of about 150 to about 1,500,000 cps at ambient temperatures.

27. A viscous liquid, paste, or gel composition comprising:
(a) 5 to 25% by weight of one or more amido betaines represented by the formula:

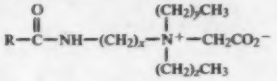


wherein:
(1) R is an alkyl or alkenyl chain containing 9 to 17 carbon atoms;
(2) x is an integer from 2 to 4;
(3) y is an integer from 0 to 3;
(4) z is an integer from 0 to 3:
(b) 2.5 to 40% by weight of one or more water-soluble inorganic or organic salts, the inorganic salt being selected from the group consisting of:
(1) sulfates of metal from Groups IA, IIA, IIB, and IIIA of the periodic table;
(2) sulfates of non-metallic ions;
(3) alkali metal carbonates.
the organic salt being incapable of forming micelles and being selected from the group consisting of the citrates, tartrates, succinates, and carboxymethyloxysuccinates of metals from Groups IA, IIA, IIB, and IIIA of the periodic table and the citrates, tartrates, succinates and carboxymethyloxysuccinates of ammonium ions.
(c) about 2.5 to 4.0% of a micelle-forming anionic surfactant; and
(d) water to 100%;

the composition having a Brookfield viscosity of about 150 to about 1,500,000 cps at ambient temperatures.

55. A viscous, liquid, paste, or gel composition comprising:

(a) 5 to 25% by weight of one or more amido betaines represented by the formula:



wherein:

(1) R is an alkyl or alkenyl chain containing 9 to 17 carbon atoms;

(2) x is an integer from 2 to 4;

(3) y is an integer from 0 to 3;

(4) z is an integer from 0 to 3;

(b) 0.25–4.0% by weight of one or more micelle-forming anionic surfactants.

(c) 5–40% by weight of one or more water-soluble inorganic or organic salt, the inorganic salt being selected from the group consisting of:

1. sulfates of metals from group IB of the periodic table;
2. alums;
3. alkali metal sesquicarbonates;
4. alkali metal tripolyphosphates and pyrophosphates;
5. salts of halogen acid selected from the group consisting of potassium chloride and ammonium chloride;
6. alkali metal silicates; the organic salt being incapable of forming micelles and being selected from the group consisting of the alkali metal salts of acetic acid, and the alkali metal salts of nitrilotriacetic acid.

(d) water;

the composition having a Brookfield viscosity of 150 to 1,500,000 cps at ambient temperatures.

4,375,422
HOMOGENEOUS DETERGENT CONTAINING NONIONIC AND SURFACE ACTIVE IMINODIPROPIONATE

Paul C. Blackstone, Collingswood, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,390

Int. Cl.[3] C11D *1/10, 1/83, 3/075, 11/02*

U.S. Cl. 252—110 **20 Claims**

1. A method of preparing an aqueous detergent slurry consisting essentially of adding an effective amount of a surface active iminodipropionate to a mixture comprising about 10%–60% builder, about 2%–25% nonionic surfactant and 0% to about 30% other ingredients whereby said nonionic surfactant is substantially prevented from separating out of said detergent slurry by said surface active iminodipropionate.

4,375,423
INDEX-MATCHED PHOSPHOR SCINTILLATOR STRUCTURES

Dominic A. Cusano, Schenectady, N.Y.; Robert K. Swank, Colorado Springs, Colo., and Philip J. White, Georgetown, Mass., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 169,023, Jul. 15, 1980, Pat. No. 4,316,817, which is a continuation-in-part of Ser. No. 863,876, Dec. 23, 1977, abandoned. This application Nov. 12, 1981, Ser. No. 320,793

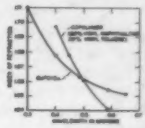
Int. Cl.[3] C09K *11/465, 11/24, 11/12, 11/06*

U.S. Cl. 252—301.36 **5 Claims**

1. A scintillator body for use in computerized tomography with increased detectable optical output comprising:

a BaFCl:Eu phosphor which absorbs electromagnetic radiation at supra-optical frequencies and emits electromagnetic radiation at optical wavelengths; and

a polyvinyl naphthalene toluene polymer matrix material in which the phosphor is suspended, said matrix material being substantially transparent to the optical wavelength radiation emitted by the phosphor and also being substantially transparent to supra-optical electromagnetic radiation, said matrix material having an index of refraction equal to the index of refraction of the phosphor, at approximately the wavelength of the optical emission of the phosphor.



4,375,424
CATALYST FOR THE PREPARATION OF DIMETHYL ETHER

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 21, 1981, Ser. No. 313,420

Int. Cl.[3] B01J *21/04, 23/06, 23/72*

U.S. Cl. 252—463 **3 Claims**

1. A catalyst for the production of dimethyl ether in high yield from carbon monoxide and hydrogen comprising from about 2% to about 8% by weight copper and from about 2% to about 8% by weight of zinc supported on an alumina support having a surface area ranging from about 150 to about 500 m^2/g, wherein said catalyst is prepared by impregnating said alumina support with a solution of solubilized salts of copper and zinc, calcining the impregnated support in an oxidizing or neutral atmosphere at a temperature ranging from about 400° C. to about 900° C. and then contacting the calcined support with a reducing atmosphere at a temperature ranging from 100° C. to about 275° C. and wherein said catalyst has a sodium content of less than about 700 ppm.

4,375,425
CATALYST FOR THE PRODUCTION OF A HYDROGEN-RICH GAS

Roger G. Duranleau, Georgetown, Tex., and Walter C. Gates, Jr., Carmel, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 214,374, Dec. 8, 1980, Pat. No. 4,338,292. This application Oct. 26, 1981, Ser. No. 315,080

Int. Cl.[3] B01J *23/04, 23/12, 23/72*

U.S. Cl. 252—467 **8 Claims**

1. A catalyst composition consisting essentially of an alkali-metal promoted partially reduced mixture of at least one copper uranate selected from the group consisting of $CuUO_4$ and CuU_3O_{10} and at least one oxide of copper selected from the group consisting of CuO and Cu_2O; and wherein the total weight of uranium present in the partially reduced catalyst composition based on the total weight of said catalyst composition is in the range of over 50 to about 90 weight percent, the weight ratio U/Cu in the catalyst is in the range of about 7-1; and at least 30 to 80 weight percent of the copper in the catalyst is in the metallic state and of the remainder of the copper 85 to 100 percent weight % is in the form of said copper uranate and the balance of the copper if any is present in the form of said copper oxide.

4,375,426
CATALYTIC FIBRE PACKS FOR AMMONIA OXIDATION

Arthur G. Knapton, Henley on Thames, and Gordon L. Selman, Near Reading, both of England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Oct. 16, 1980, Ser. No. 197,683

Int. Cl.[3] B01J *23/42, 23/46, 35/06*

U.S. Cl. 252—472 **12 Claims**

1. A catalyst assembly including an agglomeration or assem-

blage of randomly oriented melt extracted or melt spun fibres made from a platinum group metal or an alloy containing at least one platinum group metal and supported on at least one metal gauze.

4,375,427

THERMOPLASTIC CONDUCTIVE POLYMERS

Granville G. Miller, Morristown; Dawn M. Ivory, Stanhope; Lawrence W. Shacklette, Maplewood; Ronald R. Chance, Morris Plains; Ronald L. Elsenbaumer, Morristown, and Ray H. Baughman, Morris Plains, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 103,125, Dec. 13, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,953

Int. Cl.³ H01B *1/02, 1/06*

U.S. Cl. 252—512 20 Claims

1. An electrically conductive organic polymeric composition comprising at least one thermoplastic and/or solvent processible polymer and at least one electron acceptor or electron donor dopant or mixture thereof, which polymer has a main chain consisting essentially of (1) arylene units selected from the group consisting of paraphenylene units, meta-phenylene units, biphenylene units, naphthalene units and substituted forms thereof, and (2) interspersed between arylene units therein, regularly or irregularly along the chain, one or more chalcogen atoms or groups of such atoms; said composition having conductivity at 25° C. of at least 10^{-7} reciprocal ohm-cm.

4,375,428

2-SUBSTITUTED-1-ACETOXY AND HYDROXY-1-METHYL-CYCLOHEXANES

Daniel Helmlinger, Dübendorf, and Peter Naegeli, Wettingen, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

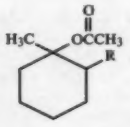
Division of Ser. No. 966,427, Dec. 4, 1978, Pat. No. 4,277,618. This application Sep. 17, 1980, Ser. No. 187,880

Claims priority, application Luxembourg, Dec. 12, 1977, 78670; Switzerland, Oct. 30, 1978, 11175/78

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R 4 Claims

1. A fragrance composition containing an olfactorily effective amount of a compound of the formula



wherein R represents sec. butyl, tert. butyl or cyclohexyl and at least one other olfactory agent.

4,375,429

PHOTODICHROIC CRYSTALS

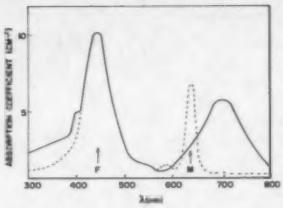
Irwin Schneider; William C. Collins, both of Alexandria, Va.; Oscar Imber, Wheaton, and Philipp H. Klein, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 573,277, Apr. 30, 1975, Pat. No. 4,087,374. This application Nov. 10, 1977, Ser. No. 850,508

Int. Cl.³ F21V *9/00*

U.S. Cl. 252—584 8 Claims

1. An alkali fluoride crystal consisting essentially of OH^- in an amount from greater than 0 to about 0.5 ppmA, one or more alkaline earth cations in an amount between 0 and 50 ppmA, non-fluoride halide anions in an amount between 0 and 50



ppmA, $SiF_6^=$ in an amount between 0 and 10 ppmA, other ions in an amount between

0 and 30 ppmA, and said alkali fluoride.

4,375,430

PROCESSES FOR PREPARATION, ISOLATION AND PURIFICATION OF DIPEPTIDE SWEETENERS

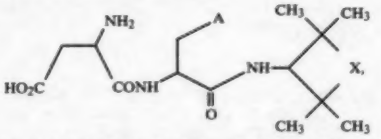
Constantine Sklavounos, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 8, 1981, Ser. No. 300,366

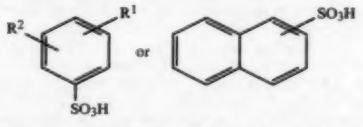
Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R 24 Claims

1. A process for the purification of an L-aspartyl-D-amino acid dipeptide amide of the formula



wherein A is hydrogen or hydroxy and X is S, SO or SO_2; which comprises selectively crystallizing said L-aspartyl-D-amino acid dipeptide amide in the form of a salt with an aromatic sulfonic acid of the formula



wherein R^1 is hydrogen, chloro or methyl and R^2 is hydrogen or methyl, from an aqueous solvent.

4,375,431

ALUMINUM TREATED PROTEINS

Marion M. Bradford; Frank T. Orthoefer, and Kenneth N. Wright, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Dec. 28, 1981, Ser. No. 334,619

Int. Cl.³ A23J *1/14;* C07G *7/00, 7/04*

U.S. Cl. 260—123.5 25 Claims

1. A method for preparing a protein composition of an improved water-soluble protein content at a pH below the isoelectric precipitating pH of the protein from phytate-containing proteinaceous materials, said method comprising treating the phytate-containing proteinaceous material with at least 0.5 mole equivalent of trivalent aluminum for each mole of phytate contained within said material, converting the proteinaceous material with said trivalent aluminum into a protein composition having a measurably higher content of water-soluble protein below the isoelectric precipitating pH of the protein and recovering the protein composition.

4,375,432
METHOD OF PREPARING VINCRISTINE

Robert A. Conrad, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 262,836, May 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 136,617, Apr. 2, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,662

Int. Cl.³ C07D *519/04*

U.S. Cl. 260—244.4 **13 Claims**

1. The process of converting VLB to vincristine which comprises contacting a solution of VLB base in tetrahydrofuran (THF) with an aqueous chromate-sulfuric acid solution at a temperature in the range about −80° C. to about −50° C. until substantially all the VLB initially present is converted to vincristine and then isolating the vincristine therefrom.

12. A process according to claim 1 in which the VLB is present as part of a mixture which includes the unseparated dimeric indole-dihydroindole alkaloids obtained from *Vinca rosea* leaves by extraction.

4,375,433
PROCESS FOR THE PREPARATION OF 6-HYDROXYMETHYL-2-(β-AMINOETHYLTHIO)-1-CARBADETHIAPEN-2-EM-3-CARBOXYLIC ACID

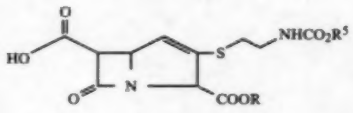
David G. Melillo, Scotch Plains, and Kenneth M. Ryan, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 63,490, Aug. 8, 1979, Pat. No. 4,252,722, which is a continuation-in-part of Ser. No. 953,819, Oct. 23, 1978, abandoned. This application Sep. 12, 1980, Ser. No. 186,778

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.2 T **1 Claim**

1. The compound:



wherein R^5 and R are readily removable protecting groups.

4,375,434
PROCESS FOR 6'-AMINO-PENICILLANOYLOXYMETHYL PENICILLANATE 1,1-DIOXIDE

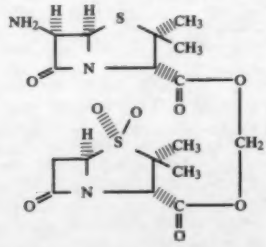
David L. Hageman, Colchester, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,465

Int. Cl.³ C07D *499/04*

U.S. Cl. 260—245.2 R **6 Claims**

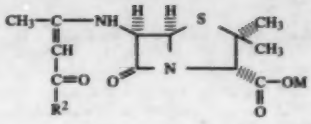
1. A process for preparing the compound of the formula



(IV)

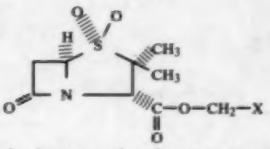
or an acid addition salt thereof, which comprises:

(i) contacting a compound of the formula



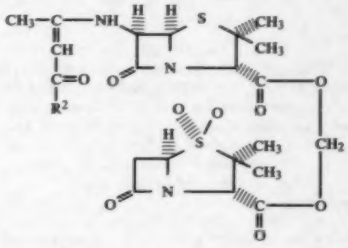
(V)

with from 0.5 to 1.5 molar equivalents of a compound of the formula



(III)

in a reaction-inert organic solvent, at a temperature in the range from 0°–60° C., to give a compound of the formula



and

(ii) exposing the product of step (i) to aqueous or partially aqueous reaction conditions, at a pH in the range from 0.5 to 3.0, at a temperature in the range from 0° to 30° C., until conversion to an acid-addition salt of the compound of formula IV is substantially complete;

wherein R^2 is selected from the group consisting of alkyl having 1 to 3 carbons, alkoxy having 1 to 3 carbons and phenyl, M is a carboxylate salt forming cation and X is selected from the group consisting of chloro, bromo, iodo, alkylsulfonyloxy having from 1 to 4 carbons, benzenesulfonyloxy and toluenesulfonyloxy.

4,375,435
3-,4-DIHYDROIMIDAZO (3,4-C)-1,3-PYRIMIDINES AND 4,5-DIHYDROIMIDAZO (3,4-C)-1,3-DIAZEPINES

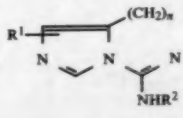
Derek W. Hills, Welwyn Garden City, and George R. White, Harpenden, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Jun. 3, 1981, Ser. No. 270,072

Int. Cl.³ C07D *471/08, 487/08*

U.S. Cl. 260—245.6 **5 Claims**

1. A compound of formula (X)



(X)

where

n is 2 or 3;

R^1 is attached to a carbon atom in the imidazole moiety and is hydrogen, halogen or alkyl; and

R^2 is benzoyl or cyano.

4,375,436

CONTINUOUS PROCESS FOR THE PRODUCTION OF CHLOROALKYL-SULFONYL ISOCYANATES

Peter Wegener, Königstein; Wilhelm Riemenschneider, Frankfurt am Main, and Dieter Ulmschneider, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 324,873

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044980

Int. Cl.³ C07C *119/042*

U.S. Cl. 260—545 R 7 Claims

1. A process for the production of chloroalkylsulfonyl isocyanates of the formula

$$Cl-\underset{\displaystyle R}{\underset{|}{CH}}-CH_2-SO_2NCO,$$

in which R denotes hydrogen, methyl or ethyl, by a catalytically induced reaction of chlorosulfonyl isocyanate with one or more C_2–C_4-olefins, which comprises carrying out the reaction in a continuous manner in a tubular reactor.

4,375,437

METHOD OF REMOVING DIOXANE FROM PHOSPHATE ESTER SURFACTANTS

Michael M. Katz, New City, N.Y.; Mohamed M. Hashem, Wayne, N.J., and Charles P. Talley, Staten Island, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,703

Int. Cl.³ C07F *9/09*

U.S. Cl. 260—990 12 Claims

1. The method of removing dioxane contaminant from a phosphate ester surfactant have a chain of repeating ethyleneoxy units and containing residual phosphoric acid, comprising the steps of:

(a) mixing the phosphate ester surfactant with a sufficient quantity of a neutralization agent to substantially completely neutralize residual phosphoric acid contained in said surfactant, and

(b) separating dioxane from said phosphate ester surfactant until the dioxane level is below about 10 ppm.

4,375,438

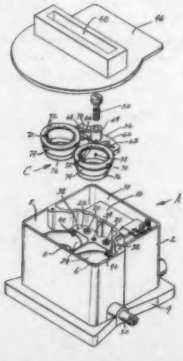
CARBURETOR AND CIRCULAR DISCHARGE NOZZLE THEREFOR

Randolph W. McKay, 1096 Lon Verna Dr., Apt. 4, Fenton, Mo. 63026

Filed Mar. 30, 1981, Ser. No. 248,945

Int. Cl.³ F02M *19/08*

U.S. Cl. 261—23 A 13 Claims



1. In combination with a carburetor having a main body provided with a reservoir for containing a volatile liquid fuel, at least one barrel surrounded by a surface which converges and then diverges to create a venturi in the barrel, a cavity located ahead of the barrel, a fuel passage leading from the reservoir to the region of the cavity, and means within the barrel downstream from the venturi thereof for controlling the amount of air that passes through the barrel, the improvement comprising: a hollow ring located in the cavity ahead of the barrel so that air before entering the barrel passes by the ring, the ring having openings that expose the hollow interior of the ring to the intake cavity so that the interior of the ring assumes a pressure close to that of air passing through the ring, the openings further being located above the bottom of the ring to enable liquid fuel to collect within the ring in a pool; and a feed tube connecting the interior of the ring with the fuel passage so that liquid fuel flows from the reservoir to the interior of the ring and produces a pool within the ring; the interior diameter of the ring being at least substantially as large as the diameter of the throat of said venturi, and the diameter and number of the apertures within it being such that air passing through the ring during operation of the carburetor causes the fuel to evaporate from the pool within the ring and escape into the air substantially as a vapor and in sufficient quantity to produce a combustible mixture of fuel and air within the barrel.

4,375,439

ANNULAR GAP SCRUBBER

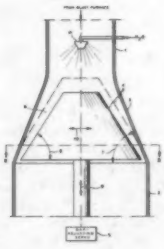
Karl-Rudolf Hegemann, Essen-Bergerhausen; Helmut Weissert, Bochum-Hiltrop, and Albert Brinkmann, Duisburg, all of Fed. Rep. of Germany, assignors to Gottfried Bischoff Bau Kompl. Gasreintigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft, Essen, Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,346

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 3029073

Int. Cl.³ B01D *47/10*

U.S. Cl. 261—62 4 Claims



1. An annular-gap scrubber comprising:

a gas inlet passage provided with means for contacting a gas with a scrubbing liquid;

a gas outlet passage aligned with but spaced from said inlet passage;

a diffusor cone communicating between said inlet passage and said outlet passage and diverging toward said outlet passage;

a central body disposed in said diffusor cone and normally spaced by an all-around clearance therefrom, said diffusor cone having a conical base angle which is greater than that of said central body;

control means connected with said central body for displacing it axially in said diffusor cone; and

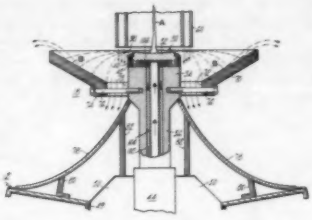
a shaft carrying said central body and resilient means between said central body and said shaft for yielding radially and self-centering said body in said diffusor cone.

4,375,440

SPLAT COOLING OF LIQUID METAL DROPLETS

Charles C. Thompson, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 20, 1979, Ser. No. 50,842
Int. Cl.³ B22D 9/10
U.S. Cl. 264—12 10 Claims



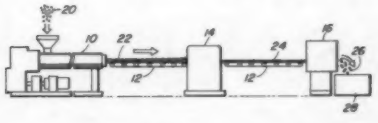
1. An apparatus for producing cooled metal splats including means for melting metal, a shaft mounted for rotation, a disc means mounted for rotation on said shaft, a conical splat plate means located around said disc means, means for pouring molten metal on said disc means, means for rotating said disc means for flinging said molten metal outwardly as droplets, and means for projecting a moving annular curtain of cooling fluid downwardly around said disc means for deflecting said droplets against said conical splat plate means to form cooled metal splats wherein said conical splat plate means is spaced from said shaft providing an annular space, said annular space being located under said annular curtain of cooling fluid so that it passes through said annular space.

4,375,441

METHOD FOR PRODUCING SINTERED POROUS POLYMERIC ARTICLES

Richard C. Adams, Chardon, and Albert J. Herold, Bedford, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 18, 1980, Ser. No. 217,886
Int. Cl.³ H05B 1/00
U.S. Cl. 264—25 38 Claims



1. A method for producing a sintered porous polymeric article from a polymeric material with a sufficiently high loss factor for effective dielectric heating comprising:

forming a preform comprising a plurality of discrete polymeric particles compressed together in a predetermined shape; and

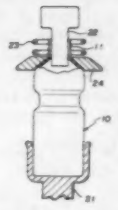
sintering said preform to form said article, said sintering step including the step of heating said preform using dielectric heating, said sintering step being conducted for a sufficient period to provide said article with desired strength and porosity.

4,375,442

METHOD FOR PRODUCING POLYESTER CONTAINER

Akiho Ota, Funabashi, and Fumio Negishi, Tokyo, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 19,913, Mar. 12, 1979, abandoned. This application Jan. 30, 1981, Ser. No. 229,877
Claims priority, application Japan, Jan. 29, 1978, 53-89840; Jul. 4, 1978, 53-81340; Oct. 9, 1978, 53-124303
Int. Cl.³ B29C 17/07
U.S. Cl. 264—25 3 Claims



1. A method for producing a hollow bottle-shaped container of biaxially oriented polyethylene terephthalate having a neck section, a bottom section, and a body section extending between said neck section and bottom section from a preform having a prefinished neck section with an annular radially outwardly extending ledge at its lower end, said method comprising the steps:

biaxially orienting in a mold the preform of the container in the regions of the container below the ledge including those immediately therebelow with no stretching in the neck section including the ledge to form the hollow bottle-shaped container;

heating only the neck section, including the ledge, with a radiant heater separate from said mold at least the glass transition temperature for at least 2 minutes 30 seconds and thereafter cooling the neck section to increase the density of the spherulitic texture only in the neck section to produce a container having a milky color only in the neck section including the ledge with the remainder of the container being transparent.

4,375,443

PROCESS FOR PRODUCING ELECTRICALLY-CONDUCTIVE ARTICLES FROM SILICON POWDER BY TREATMENT IN THE PRESENCE OF BORON OXIDE

Antoon H. M. Kipperman, Nuenen, and Lambertus E. H. Habraken, Waalre, both of Netherlands, assignors to Holec N.V., Utrecht, Netherlands

Filed Sep. 24, 1980, Ser. No. 190,203
Claims priority, application Netherlands, Sep. 26, 1979, 7907160
Int. Cl.³ C04B 35/00
U.S. Cl. 264—61 5 Claims

1. A process for producing a shaped, electrically-conductive silicon-containing article which comprises the steps of

(a) coating particles of a silicon powder with boron oxide,

(b) moulding at an elevated pressure the coated particles of silicon powder from step (a) into an intermediate article of the desired shape, and

(c) sintering the shaped article of step (b) in an inert atmosphere by heating the shaped article to between 450° and 550° C. and maintaining this temperature for between 0.5 and 2 hours, then heating the shaped article to between 1150° and 1250° C. and maintaining this temperature for between 1 and 2 hours and finally subjecting the shaped article to a temperature which is between 200° and 300° C. less than the last-mentioned temperature range and maintaining this temperature for up to 24 hours to form the desired shape, electrically-conductive silicon-containing article.

4,375,444
METHOD FOR THE ELIMINATION OF CIRCUMFERENTIAL STRESS CRACKS IN SPUN POLYESTERS

William O. Deeken, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 77,417, Sep. 20, 1979, Pat. No. 4,328,108. This application Jan. 21, 1982, Ser. No. 341,405

Int. Cl.³ B29G *5/00*

U.S. Cl. 264—136 **3 Claims**

1. A process to minimize circumferential stress cracking in spun polyester filaments, comprising:

(a) mixing a miscible non-aqueous solution of a fiber finishing emulsion and an organic solvent, said emulsion having emulsifiers, lubricating oils, antistat oils and heat stabilizers; said organic solvent selected from the group consisting of: mineral oil, kerosene, and combinations thereof;

(b) melt spinning polyester fiber;

(c) contacting said solution with the fiber;

(d) storing the spun polyester; and

(e) draw twisting the spun polyester to produce a spun polyester yarn having minimal circumferential stress cracks.

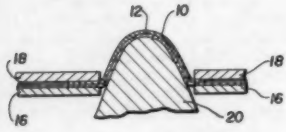
4,375,445
METHOD FOR FORMING TWO-LAYER BRASSIERE CUP

Raymond Cole, Hillsdale; Raymond Kennedy, Montvale, and Lincoln McCluskey, Montville, all of N.J., assignors to International Playtex, Inc., Stamford, Conn.

Filed Jul. 6, 1981, Ser. No. 280,402

Int. Cl.³ B29C *17/00, 27/00*

U.S. Cl. 264—250 **15 Claims**



1. A method of making a brassiere cup from two layers of stretchable material comprising:

attaching a first layer of stretchable material to a second layer of stretchable material;

molding a first area of said first layer and juxtaposed portion of said second layer with one of said layers contacting a heated male mold to form the crown of the cup; and

molding a second area of said first and second layers including said first area with the other of said layers contacting a heated male mold to form the remainder of the cup.

4,375,446
PROCESS FOR THE PRODUCTION OF A NONWOVEN FABRIC

Shigeo Fujii; Tokuzo Ikeda; Takashi Mikami, and Shuji Okano, all of Oi, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP79/00108, § 371 Date Dec. 21, 1979, § 102(e) Date Dec. 21, 1979, PCT Pub. No. WO79/01014, PCT Pub. Date Nov. 29, 1979

PCT Filed May 1, 1979, Ser. No. 167,637

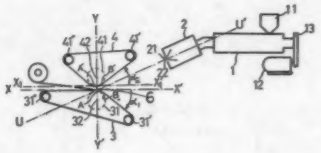
Claims priority, application Japan, May 1, 1978, 53-50745

Int. Cl.³ D04H *3/16*

U.S. Cl. 264—518 **24 Claims**

1. In a process for the production of a nonwoven fabric comprising spinning continuously a molten thermoplastic resin from a plurality of spinning holes provided in a spinning apparatus thereby to spin fibers, while simultaneously jetting a gas at a high speed from gas discharging holes provided adjacent to the spinning holes to stretch the spun fibers out of the thermoplastic resin, thereby forming a fiber stream consisting of the fibers and the gas, then blowing the fiber stream into a collecting zone to form a mat wherein the improvement comprises:

directing said fiber stream into a fiber-collecting zone formed by two porous moving members having a gap therebetween having a large number of pores of 5 to 200 mesh therein, said members being arranged to come into contact with each other via the fibers to provide a contact region, said members having an angle of divergence of 0° to 90°, said gap between the two members increasing as the distance increases from said contact region in the



opposite direction to the movement of said members, and blowing said fiber stream in said fiber-collecting zone in such a manner that the central plane of said fiber stream is directed within said fiber-collecting zone on at least one said porous member a distance from said contact region equal to less than at a point within 5 times the width of the fiber stream on said porous member, the angle at which the fiber stream is blown being 0° to 90°, the fibers being collected on said porous member or members while said gas is withdrawn through the pores of said members, whereby little gas flow passes over the surface of the resulting nonwoven fabric, and

compressing said resulting nonwoven fabric, between said porous members to provide a nonwoven fabric of uniform thickness.

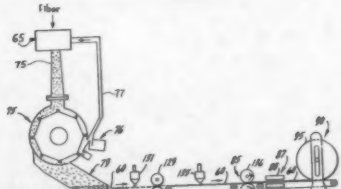
4,375,447
METHOD FOR FORMING AN AIR-LAID WEB OF DRY FIBERS

Raymond Chung, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 106,141, Dec. 21, 1979, abandoned. This application Apr. 3, 1981, Ser. No. 250,545

Int. Cl.³ D04H *3/16*

U.S. Cl. 264—518 **12 Claims**



1. A method of forming an air-laid web of dry fibers having a basis weight of from 7.5 to 50 lbs./2880 ft.^{2} comprising:

(a) forming a feed mat of dry fibrous materials having a controlled cross-directional profile;

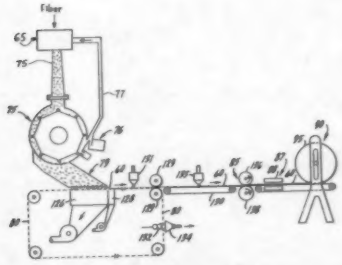
(b) compacting the feed mat to provide sufficient mat integrity to permit delivery to a remote point yet without sufficient compaction as to cause hydrogen bonding of fibers;
(c) delivering the compacted feed mat to a forming head positioned over a moving foraminous forming surface;
(d) dispersing the dry fibrous materials uniformly throughout the forming head in a rapidly moving aerated bed of individualized fibers, soft fiber flocs and aggregated fiber masses and in an environment maintained substantially free of fiber grinding and disintegrating forces;
(e) continuously separating from the aerated bed a portion of the dry fibrous materials in the form of aggregated fiber masses having a bulk density in excess of 0.2 g./cc;
(f) discharging said aggregated fiber masses from the forming head;
(g) conveying the individualized fibers and soft fiber flocs from the forming head through a discharge opening at a fiber throughput rate of at least 0.5 lbs./hr. per square inch of discharge opening through an enclosed forming zone;
(h) air-laying the individualized fibers and soft fiber flocs on the moving foraminous forming surface so as to form an air-laid web of randomly oriented dry individualized fibers and soft fiber flocs on the forming surface.

4,375,448

METHOD OF FORMING A WEB OF AIR-LAID DRY FIBERS

David W. Appel, Wittenberg, and Raymond Chung, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 106,144, Dec. 21, 1979, abandoned. This application Apr. 3, 1981, Ser. No. 250,546
Int. Cl.³ B29J 5/00
U.S. Cl. 264—518 **14 Claims**



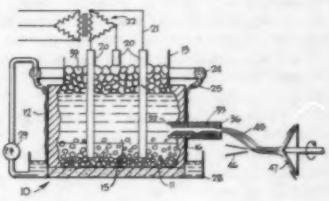
1. The method of forming a web of airlaid dry fibers comprising:
(a) feeding a quantity of air-borne fibrous materials having uniform cross direction basis weight profile to at least one rotary forming head having a plurality of rotating rotor bars therein;
(b) maintaining said fibrous materials within said at least one forming head in an aerated fiber bed such that damage to said fibrous material within said at least one forming head is substantially avoided;
(c) separating from one percent to ten percent of said fibrous materials in the form of aggregated fiber masses from said aerated fiber bed and discharging said aggregated fiber masses from said at least one forming head through a tangential slot therein, said aggregated fiber masses having a bulk density of at least 0.2 g/cc;
(d) discharging said fibrous materials from said at least one forming head through a screen member and thereafter conveying said fibrous material through an enclosed forming zone to a foraminous forming surface at the rate of from about 0.5 lbs/hr. per square inch of screen member to at least 1.55 lbs/hr/per square inch of screen member to form a web of fibers;
wherein said web of fibers produced therefrom is characterized by a uniform cross-direction basis weight profile and is substantially free of aggregated fiber masses.

4,375,449

ELECTRIC FURNACES

Michael Siddall, Pooraka, Australia, assignor to Sidchrome (S.E. Asia) Limited, Hong Kong, Hong Kong

Filed May 20, 1980, Ser. No. 151,684
Claims priority, application Australia, May 23, 1979, PD8921
Int. Cl.³ C03B 5/027
U.S. Cl. 373—33 **11 Claims**

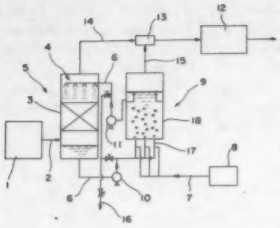


I claim:
1. A method of fusing fusible oxide compounds of metal/non-metals in an electric furnace having a container with a steel side wall containing a plurality of electrodes, comprising:
charging said furnace container with at least some fusible oxide compounds,
establishing an electrically conductive melt of some of said oxide compounds in said furnace and passing electric current between said electrodes and through said melt to thereby fuse further of said oxide compounds,
passing a free-flowing continuous film of water downwardly over the outer surface of said side wall to thereby cool and freeze a layer of said fused compounds contiguous with the inner surface of the side wall,
discharging said oxide compounds after having been fused from the container as a continuous stream through a discharge sleeve which extends through said wall and said frozen layer into the melt,
controlling the rate of discharge of said fused oxide compounds by adjustment of an adjusting flow control water-cooled valve on the outer end of said sleeve and
further charging the oxide compounds in discrete form into the container to form a layer of fusible oxide compounds over the melt.

4,375,450
GAS PURIFICATION SYSTEM

Katsuo Katagiri, Nara, and Kiyotaka Shimazu, Higashiosaka, both of Japan, assignors to Osaka Gas Company, Ltd., Osaka, Japan

Filed Apr. 15, 1981, Ser. No. 254,558
Int. Cl.[3] B01D 50/00
U.S. Cl. 422—170 2 Claims



1. A system for purifying coal carbonization product gas containing NCN gas, H_2S gas and NH_3 gas, comprising:

first treatment means including a closed chamber which receives said coal carbonization product gas at a lower portion thereof, spray means mounted in an upper portion of said chamber to spray an alkaline absorbent liquid for contact with said coal carbonization product gas,

absorbent liquid resuscitation means including a further closed chamber connected to said first treatment means through a pump and recirculation conduit means,

nozzle means connected to said recirculation conduit means which feeds the absorbent liquid received from said first treatment means, together with an oxygen containing resuscitation gas, into said resuscitation means,

a further recirculation circuit means connected to said resuscitation means and said spray means which feeds the absorbent liquid resuscitated in said resuscitation means to said spray means, and

second treatment means connected to a top portion of said first treatment means through supply conduit means, said second treatment means being adapted to remove NH_3 gas remaining in the coal carbonization gas sent from said first treatment means,

said nozzle means is in a form of a premix nozzle including therein a resuscitation gas passage joining an absorbent liquid passage, whereby the resuscitation gas is mixed into the absorbent liquid in fine bubbles prior to entry into said resuscitation means, and

said resuscitation means is connected at a top portion to an upstream side of said second treatment means, whereby the resuscitation gas discharged from said resuscitation means is delivered to said second treatment means confluently with the coal carbonization product gas discharged from said first treatment means.

4,375,451
IN-SITU LEACH RATE MEASURING SYSTEM

Peter F. Seligman, San Diego, and John W. Neumeister, El Cajon, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

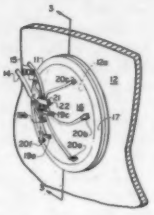
Filed Aug. 13, 1981, Ser. No. 257,302
Int. Cl.[3] G01N 23/06; B63B 9/00
U.S. Cl. 422—281 4 Claims

1. An apparatus for leaching a coated surface comprising:

a spherical segment shaped shell having a ring-shaped lip for defining an open mouth cavity;

a double-edged ring-shaped gasket bonded onto the ring-shaped lip and disposed about the mouth of the cavity for pliably accommodating the coated surface to hold the lip on the surface and to keep ambient water out;

means mounted on the spherical segment shaped shell for directing the flow of water therein, the directing means is a plurality of nozzles located at and near the apex of the spherical segment shaped shell and oriented to direct the flow of water onto and along the coated surface for assuring the leaching thereof;



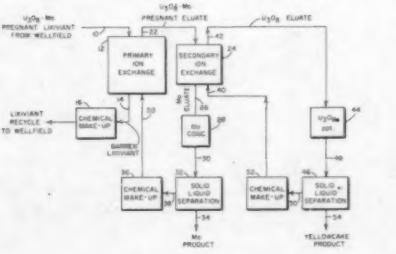
drawing means having a plurality of outlet fittings equidistantly circumferentially disposed near the ring-shaped lip for drawing the flow of water from along the coated surface to assure the leaching thereof; and

means connected to the drawing means for pumping water from the spherical segment shaped shell.

4,375,452
PROCESS FOR THE SEPARATION AND RECOVERY OF MOLYBDENUM AND URANIUM FROM LEACH SOLUTION USING ION EXCHANGE

Raymond J. Jan, Englewood, and Alistair H. Montgomery, Lakewood, both of Colo., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,579
Int. Cl.[3] C01G 43/00
U.S. Cl. 423—7 6 Claims



1. A process for the recovery of uranium from uranium-containing ore which also contains molybdenum, comprising:

leaching said ore to form uranium and molybdenum values;

passing the leachate through an anion-exchange resin to capture said uranium and said molybdenum values;

eluting said resin with a salt solution containing an anion capable of replacing said uranium and said molybdenum values;

passing the eluate through a weak acid cationic resin in its hydrogen form to capture said uranium values;

eluting said cationic resin with an acid solution capable of replacing said uranium values to recover said uranium values free of molybdenum values; and

treating the eluate containing values to precipitate uranium therefrom.

4,375,453

RECOVERY OF GADOLINIUM AND GALLIUM OXIDES

David Nalewajek, West Seneca; Eugene B. Recla; Robert A. Wiles, both of Hamburg, and Richard E. Elbeck, Orchard Park, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 28, 1981, Ser. No. 334,719
Int. Cl.[3] C01G 15/00; C01F 17/00
U.S. Cl. 423—21.1 3 Claims

1. A method for recovering gadolinium and gallium oxides from by product material which contains both of these oxides and various impurities comprising the steps of:

(a) dissolving the gadolinium and gallium oxide in a strong mineral acid selected from the group consisting of hydrochloric and nitric acids,

(b) isolating the filtrate and precipitating gadolinium sulfate from said filtrate by adding thereto sulfuric acid,

(c) separating washing and drying the precipitated gadolinium sulfate,

(d) converting the gadolinium sulfate salt from step (c) to ammonium gadolinium sulfate by dissolving the sulfate salt and precipitating with ammonium oxalate and calcining the recovered ammonium gadolinium oxalate to yield gadolinium oxide,

(e) distilling the filtrate from step (b) to reduce the volume and thereby precipitate therefrom gallium sulfate,

(f) separating and dissolving the precipitate from step (e) in water and precipitating the gallium sulfate from the aqueous solution with excess ethanol,

(g) washing and drying the gallium sulfate obtained in step (f), dissolving this salt in water, treating the solution with ammonium oxalate and precipitating from said solution, by the addition of ammonium hydroxide, ammonium gallium oxalate and gallium hydroxide and

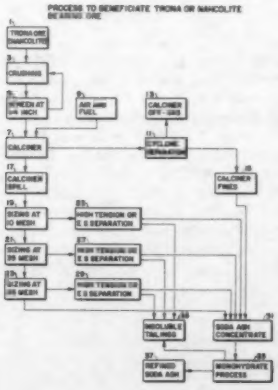
(h) isolating, drying and calcining precipitate from step (g) to form gallium oxide.

4,375,454

ELECTROSTATIC ENRICHMENT OF TRONA AND NAHCOLITE ORES

Eugene G. Imperto, Willingboro, N.J., and Orval H. Hilliard, Spokane, Wash., assignors to Intermountain Research and Development Corporation, Green River, Wyo.

Filed Dec. 12, 1980, Ser. No. 215,886
Int. Cl.[3] C22B 26/10; B03C 7/00, 1/00; C01D 31/24
U.S. Cl. 423—206 T 10 Claims



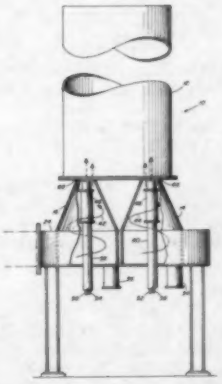
1. A process for beneficiating an ore containing sodium carbonate values in combination with insoluble impurities said ore being selected from the group consisting of trona bearing ore and nahcolite bearing ore, to give a product containing a greater percentage of sodium carbonate and a lesser percentage of insoluble impurities than were present in said ore which comprises: crushing said ore to a particle size smaller than about 6.7 mm, returning ore particles larger than about 6.7 mm to the crusher, calcining the crushed ore particles to provide at least a surface coating of sodium carbonate, separating fines from the calciner off-gases and collecting said fines in a container; separating the calcined ore particles into a plurality of fractions containing particles of relatively uniform particle size, collecting that sized fraction having a particle size less than about 0.212 mm in a container, passing the other sized fractions through a high voltage gradient thereby effecting a separation of said other sized fractions into an ore concentrate containing a greater percentage of sodium carbonate and a lesser percentage of insoluble impurities than were present in said other sized fractions and ore tailings containing a lesser percentage of sodium carbonate and a greater percentage of insoluble impurities than were present in said other sized fractions, collecting said ore concentrate from each of said other sized fractions in a container, and combining said fines with that sized fraction having a particle size less than about 0.212 mm and said ore concentrate from each of said other sized fractions to produce a technical grade of soda ash.

4,375,455

METHOD AND APPARATUS FOR COOLING AND NEUTRALIZING ACID GASES

Aaron J. Teller, Westboro; Denis R. J. Roy, and Shih K. Lin, both of Shrewsbury, all of Mass., assignors to Teller Environmental Systems, Inc., Worcester, Mass.

Continuation of Ser. No. 160,443, Jun. 18, 1980, Pat. No. 4,293,524, which is a continuation of Ser. No. 944,076, Sep. 20, 1978, abandoned. This application Mar. 30, 1981, Ser. No. 249,166
Int. Cl.[3] B01D 53/34
U.S. Cl. 423—210 5 Claims



1. A process for treating an effluent gas containing particles and acidic components which includes:

(a) introducing the effluent gas into a first chamber;

(b) flowing the gas through the first chamber in an upwardly moving diminishing spiral-like flow to effect separation of the larger particles from the gas;

(c) collecting the particles separated from the gas in the first chamber;

(d) transferring the effluent gas from the first chamber into a second chamber;

(e) introducing a spray of a basic material in a direction cocurrent with the upwardly moving effluent gas at the location where the effluent gas has completed its spiral path and wherein it is transferred into the second chamber;

(f) flowing the gas through the second chamber in a substantially upward direction;
(g) controlling the residence time of the effluent gas in the second chamber to effect a reaction of the basic spry and acidic components while moving the acidic components upwardly in the second chamber;
(h) evaporating substantially all of the basic spray to form a dry steam with entrained acid salts, the dry steam exiting from the chamber and being substantially free of acid gases; and
(i) removing the products of reaction after the effluent stream has left the second chamber.

4,375,456

METHOD OF PRODUCING SODIUM ALUMINUM PHOSPHATE

John S. C. Chiang, Mercerville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 1, 1982, Ser. No. 353,668
Int. Cl.³ C01B *25/26*
U.S. Cl. 423—306 **7 Claims**

1. A method of spray drying 1-3-8 sodium aluminum phosphate reaction mixtures comprising the steps:
A. forming an aqueous 1-3-8 SALP reaction mixture by reacting Na_2CO_3,$Al(OH)_3$ and H_3PO_4 in an Na:Al:PO_4 atomic ratio of 1:3:8 at a water content between about 30% and about 48% and in the presence of an effective amount of a non-toxic, substantially, water soluble metal sulfate as a precipitation inhibitor;
B. adding sufficient water to the precipitation free, clear 1-3-8 SALP reaction mixture from step A to ensure a SALP content of from about 10% to about 55%:
C. spray drying the 1-3-8 SALP solution of step B, and
D. recovering the spray dried product.

4,375,457

PROCESS FOR PURIFYING YELLOW PHOSPHORUS

Fawzy G. Sherif, Stony Point, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 30, 1981, Ser. No. 307,128
Int. Cl.³ C01B *25/01, 25/02, 25/04*
U.S. Cl. 423—322 **8 Claims**

1. A process of purifying yellow phosphorus comprising contacting the yellow phosphorus with an oxygen acid of phosphorus carried on a solid inert absorbent support, and separating the purified phosphorus product therefrom.

4,375,458

SYNTHESIS OF LARGE CRYSTALLITE ZEOLITES

Francis G. Dwyer, West Chester, Pa.; Pochen Chu, West Deptford, and William E. Cormier, Jr., Clarksboro, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 949,461, Oct. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 825,369, Aug. 17, 1977, abandoned. This application Sep. 23, 1981, Ser. No. 304,725
Int. Cl.³ C01B *33/28*
U.S. Cl. 423—329 **10 Claims**

1. In a method of preparing a crystalline aluminosilicate zeolite having a SiO_2 to Al_2O_3 molar ratio of from about 25 to about 1000 and a Constraint Index of from 1 to 12 from an aqueous reaction mixture comprising sources of silica, alumina and alkylammonium cations and metal cations, the improvement which comprises having in the reaction medium for which said zeolite is prepared, metal cations having an ionic radius of from 1.40 Å to the pore size of the specific zeolite whereby the crystal size of the zeolite product in increased to at least 1 micron.

4,375,459

CYTORECEPTOR ASSAY

Stavros C. Manolagas, Del Mar, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 20, 1980, Ser. No. 161,462
Int. Cl.³ G01N *33/56, 33/58*
U.S. Cl. 435—2 **14 Claims**

1. A method for determining an analyte capable of specifically binding to a cytosol cell receptor, said method comprising:
combining in a liquid assay medium supportive of cell viability, a sample suspected of containing said analyte, cells having a specific extracellular receptor for said analyte, and tagged analyte, wherein the tag provides a detectable signal;
after a sufficient time for said analyte and tagged analyte to bind to said cells, separating said cells from said liquid assay medium, substantially free of non-specifically bound tagged an analyte; and
determining the amount of tagged analyte bound to said cells by means of said detectable signal, as compared to the amount of tagged analyte determined in an assay with a known amount of analyte.

4,375,460

OPAQUE DENTIFRICE

Kenneth Harvey, Wilmslow; Harry Hayes, Warrington, and Anthony J. Morton, Withington, all of England, assignors to Colgate-Palmolive, New York, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,133
Claims priority, application United Kingdom, Sep. 24, 1980, 8030770
Int. Cl.³ A61K *9/16, 9/18*
U.S. Cl. 424—52 **8 Claims**

1. An opaque dentifrice comprising 20–99% by weight of a polishing agent of insoluble sodium metaphosphate which tends to cause sloughing of oral mucosa and an effective amount of at least 0.2% by weight of an anionic alkali metal salt of a substantially saturated higher fatty alcohol alkylene oxide sulphate containing 12–16 carbon atoms in the alcohol moiety and 1–10 alkylene oxide groups wherein the alkylene groups contain 1–4 carbon atoms effective in reducing or preventing sloughing, said dentifrice being free from concentrations of sodium lauryl sulphate which cause at least moderately heavy sloughing.

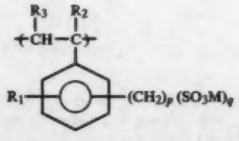
4,375,461

SULFONATED VINYL AROMATIC HOMOPOLYMERS AND COPOLYMERS AS DENTAL PLAQUE BARRIERS

Robert J. Gander, Whitehouse; Tibor Sipos, Lebanon, and Carl J. Buck, Berkeley Heights, all of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Jul. 25, 1980, Ser. No. 172,491
Int. Cl.³ A61K *7/16, 7/22, 31/315, 31/205*
U.S. Cl. 424—56 **7 Claims**

1. An oral hygiene composition comprising an effective amount for preventing deposition of dental plaque on teeth of a sulfonated vinylaromatic polymer of at least 50% by weight of at least one repeating unit selected from the group consisting of structure (A),

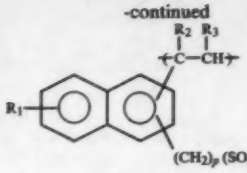


(A)

structure (B),

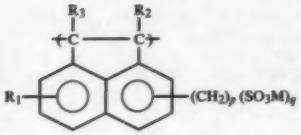
-continued

(B)



and structure (C),

(C)

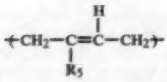


and from 0 to 50% by weight of a repeating unit selected from the group consisting of structure (D),

(D)

and structure (E),

(E)



wherein R_1 is selected from the group consisting of hydrogen, linear or branched lower alkyl of up to 5 carbon atoms, alkoxy of 1–20 carbon atoms, fluorine, chlorine, and bromine; R_2 and R_3 are each independently selected from the group consisting of hydrogen and methyl; R_4 is hydrogen or an alkyl group of 1–18 carbon atoms; and R_5 is selected from the group consisting of hydrogen, methyl, chlorine, bromine, and phenyl, q, which is the average number of sulfonate groups per aromatic groups, has a value in the range of from about 0.3 to about 2.6, p is either zero or a number equal to the value of q, M is selected from the group consisting of lithium, sodium, potassium, calcium, magnesium, zinc, aluminum, hydrogen and the ammonium salt derived from ammonia or a pharmaceutically-acceptable organic amine, said polymer having an average molecular weight in the range of about 500 to about 2,000,000 in a pharmaceutically-acceptable oral hygiene vehicle compatible with said polymer.

4,375,462

A-32724 ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

David H. Berg, Greenfield, and Marvin M. Hoehn, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 16, 1981, Ser. No. 302,909
Int. Cl.[3] A61K *35/00*; C12P *1/02*
U.S. Cl. 424—117 **2 Claims**

1. Antibiotic A-32724 Factor A having the following physical and chemical properties:

(1) Melting point of about 175°–176° C. (dec.);

(2) Molecular weight 738 (determined by nuclear magnetic resonance spectrum, sulfate determination, and field-desorption and electron-impact mass spectrometry);

(3) Ultraviolet absorption spectrum in aqueous solution having absorption maxima at 265 nm (ϵ=333), and 271 nm (sh) (ϵ=252);

(4) Infrared absorption spectrum shown in FIG. 1 as measured by KBr pellet method and having the following distinguishable absorption maxima: 3426 (strong), 2923 (strong), 2852 (strong), 1736 (medium), 1720 (medium), 1616 (medium), 1590 (medium), 1458 (medium), 1383 (shoulder), 1375 (medium weak), 1241 (very strong), 1123 (weak), 1068 (strong), 981 (strong), 884 (weak), 865 (weak), 625 (weak), and 581 cm.$^{-1}$ (weak);

(5) Proton magnetic resonance spectrum in DMSO-d_6, at 100 MHz, using internal TMS as reference, as follows:

Resonance Description	Chemical Shift δ, ppm	No. of Protons
Triplet	6.80	1
Doublet	6.74	2
Multiplet	4.67	1
Doublet	4.60	1 (exchangeable)
Multiplet	3.40	1
Triplet	~2.5	Overlapped with solvent
Singlet	1.97	3
Multiplet	~1.5	42
Broad singlet	1.23	
Triplet	0.84	3

(6) ^{13}C Nuclear magnetic resonance spectrum, in DMSO-d_6, using internal TMS as reference, showing chemical shifts, expressed in parts per million, as follows:

No.	PPM
1	170.0
2	153.4
3	142.7
4	115.1
5	110.4
6	75.8
7	70.8
8	35.2
9	32.2
10	31.2
11	30.9
12	29.3
13	29.0
14	28.7
15	28.5
16	25.1
17	25.0
18	22.1
19	20.8
20	13.9

(7) Solubility to solvent: Soluble in water and methanol;

(8) Color and form of substance: Amorphous white powder; and

(9) An empirical formula of $C_{33}H_{56}O_{11}S_2Na_2$.

4,375,463

RAVIDOMYCIN AND PROCESS FOR PREPARATION

Surendra N. Sehgal, Dollard des Ormeaux, and Claude Vezina, Oka, both of Canada, assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada

Continuation of Ser. No. 72,505, Sep. 4, 1979, abandoned, which is a division of Ser. No. 957,509, Nov. 3, 1978, Pat. No. 4,230,692. This application Mar. 13, 1981, Ser. No. 243,238
Int. Cl.[3] A61K *35/00*
U.S. Cl. 424—122 **2 Claims**

1. A method of treating transplanted tumors, selected from the group consisting of lymphocytic leukemia P-388, colon 38, and $CD8F_1$ mammary tumor, in a mammal, which comprises administering to said mammal an antitumor effective amount of ravidomycin.

4,375,464

ANTIBIOTIC AY24,668 AND PROCESS OF PREPARATION

Surendra N. Sehgal, Beaconsfield, and Claude Vezina, Oka, both of Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Nov. 19, 1981, Ser. No. 323,006
Int. Cl.[3] A61K *35/00*; C12P *1/06*
U.S. Cl. 424—122 3 Claims

3. A method of inhibiting the growth of pathogenic fungi in a mammal which comprises administering to the mammal an antifungally effective amount of the antibiotic AY24,668 which

a. is a solid giving a colorless, crystalline compound with a melting point of 122° to 124° C., after recrystallization from diethyl ether;
b. is soluble in diethyl ether, chloroform, acetone, methanol and dimethylformamide, very sparingly soluble in hexane and petroleum ether and substantially insoluble in water;
c. shows a uniform spot on thin layer plates of silica gel;
d. has a characteristic elemental analysis of about C, 67.75%, H, 8.93% N, 1.72%;
e. exhibits the following characteristic absorption maxima in its ultraviolet absorption spectrum (95% ethanol): 267 nm ($E_{1cm}^{1\%}$ 421), 277 nm ($E_{1cm}^{1\%}$ 549) and 288 nm ($E_{1cm}^{1\%}$ 423);
f. has a characteristic infrared absorption spectrum shown in accompanying FIG. 1;
g. has a characteristic nuclear magnetic resonance spectrum as shown in accompanying FIG. 2;
h. has a minimum inhibitory concentration of 0.36 to 10.0 μg/ml against *Candida albicans;* and
i. exhibits a LD_{50} (i.p., mice) of >900 mg/kg.

4,375,465

COSMETIC PRESERVATIVE

Raymond Drakoff, New York, N.Y., assignor to Lever Brothers Company, New York, N.Y.

Filed Jun. 19, 1981, Ser. No. 275,472
Int. Cl.[3] A61K *31/00, 31/85, 47/00*
U.S. Cl. 424—175 7 Claims

1. A cosmetic composition susceptible to degradation due to bacterial action and to browning due to the Maillard reaction which comprises:

(a) a hydroxymethane sulfonate salt in an amount sufficient to produce a preservative effect simultaneously against said bacterial action and said browning wherein the cation of said salt is selected from the group consisting of sodium, potassium, ammonium and mixtures thereof; and
(b) an aqueous cosmetic formulation having a pH value of about 7.0 to 9.5.

4,375,466

METHOD OF DETERMINING AND TREATING AFFECTIVE ILLNESS

Janet Leuschner, 4614 Fifth Ave., Apartment 407, Pittsburgh, Pa. 15213

Filed Apr. 14, 1980, Ser. No. 139,706
Int. Cl.[3] A61K *47/00, 31/135*; G01N *33/48*
U.S. Cl. 424—1 5 Claims

1. A method of treating a patient having an affective illness with an effective drug comprising:

obtaining a serological sample from the patient;
measuring the serotonin uptake of the blood platelets in the sample; comparing the measured blood platelet serotonin uptake of the patient with a standard blood platelet serotonin uptake characteristic of persons having a particular type of affective illness to determine the type of affective illness of the patient; and
treating the patient with an effective amount of at least one drug which is effective in treating affectively ill persons having the same range of blood platelet serotonin uptake as the patient.

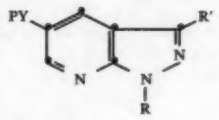
4,375,467

5-(PYRIDINYL)-1H-PYRAZOLO[3,4-b] PYRIDINES AND THEIR CARDIOTONIC USE

George Y. Lesher, Schodack, and Monte D. Gruett, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 305,913
Int. Cl.[3] C07D *487/04*; A61K *31/44*
U.S. Cl. 424—263 8 Claims

1. A 1-R-3-R'-5-PY-1H-pyrazolo[3,4-b]pyridine having the formula



where R is lower-alkyl or lower-hydroxyalkyl, R' is hydrogen or lower-alkyl, and PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, or acid-addition salts thereof.

7. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient a cardiotonically effective amount of 1-R-3-R'-PY-1H-pyrazolo[3,4-b]pyridine or pharmaceutically acceptable acid-addition salt thereof, where R is lower-alkyl or lower-hydroxyalkyl, R' is hydrogen or lower-alkyl, and PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents.

4,375,468

CONSTANT ORDER RELEASE ASPIRIN COMPOSITION AND METHOD OF TREATING ARTHRITIS

James M. Dunn, Englewood, Colo., assignor to Verex Laboratories, Inc., Englewood, Colo.

Continuation of Ser. No. 282,544, Jul. 13, 1981, abandoned. This application Apr. 8, 1982, Ser. No. 366,594
Int. Cl.[3] A61K *9/30, 9/56, 31/60*
U.S. Cl. 424—230 13 Claims

1. A constant order release aspirin tablet comprising aspirin, from 0.5 to 10 weight percent of a hydrogenated vegetable oil, from 0.5 to 7.0 weight percent of a saccharide selected from the group consisting of lactose, sucrose, dextrose, fructose and maltose, and a lubricant.

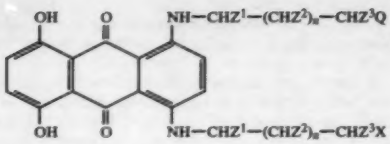
4,375,469

OXAZA HETEROCYCLE-ANTHRAQUINONES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

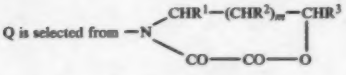
Keith C. Murdock, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 4, 1982, Ser. No. 345,671
Int. Cl.[3] A61K *31/55*; C07D *273/06*; A61K *31/535*; C07D *265/32*
U.S. Cl. 424—244 20 Claims

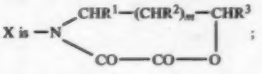
1. An anthraquinone of the formula



or a pharmaceutically acceptable acid-addition salt thereof, wherein:



or $-NHCHR^1(CHR^2)_mCHR^3OH$;



R^1, R^2 and R^3 are each independently selected from hydrogen or alkyl of 1 to 3 carbons; Z^1, Z^2 and Z^3 are each independently selected from hydrogen or alkyl of 1 to 2 carbons; and n is 0 or 1 and m is 0 or 1.

3. A method of inducing regression of leukemia cell growth in a patient or inhibiting growth of solid tumors in a patient, which comprises

administering by injection to said patient an effective amount of a compound according to claim 1.

4,375,470

2(1-PIPERAZINYL)-CYCLOHEPTIMIDAZOLE ANTIHYPERTENSIVE COMPOSITION AND METHODS

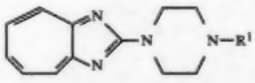
Jehan F. Bagli, Kirkland, and Tibor Bogri, Montreal, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 118,343, Feb. 4, 1980, Pat. No. 4,258,188. This application Oct. 17, 1980, Ser. No. 198,024

Int. Cl.³ A61K *31/495;* **C07D** *401/14, 403/04*

U.S. Cl. 424—250 **3 Claims**

1. An antihypertensive pharmaceutical composition, which comprises an effective amount of a compound of



in which R^1- is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, hydroxy(lower)alkyl, lower alkoxycarbonyl, formyl, phenyl(lower)alkyl, phenylcarbonyl, 2- or 3-furanylcarbonyl, phenyl, 2- or 3-pyridinyl, 1-oxo(lower)alkoxy(lower)alkyl, 2-imidazolinyl, aminoiminomethyl, aminothioxomethyl, (lower alkylamino)thioxomethyl, (phenylamino)thioxomethyl, hydrazinothioxomethyl, (lower alkylthio)thioxomethyl, sodium thiothioxomethyl, α-halophenyl- α-phenylmethyl or phenyl substituted with one or two members selected from the group consisting of halo, lower alkyl, lower alkoxy or trifluoromethyl; or a therapeutically acceptable acid addition salt thereof and a pharmaceutically acceptable carrier therefor.

4,375,471

4-ARYLOXY-1,2,3,4-TETRAHYDROISOQUINOLINES

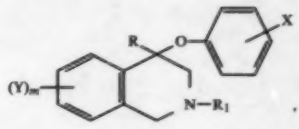
Richard C. Effland, Bridgewater; Larry Davis, Sergeantsville, and Joseph T. Klein, Bridgewater, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Feb. 19, 1981, Ser. No. 235,801

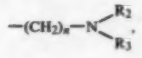
Int. Cl.³ A61K *31/47;* **C07D** *217/24, 401/06*

U.S. Cl. 424—258 **32 Claims**

29. An anticonvulsant composition which comprises an anticonvulsant effective amount of a compound having the formula



where Y is hydrogen and alkoxy of 1 to 6 carbon atoms; X is hydrogen, cyano, benzoyl, trifluoromethyl, phenyl, halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms and nitro; R is hydrogen and alkyl of 1 to 6 carbon atoms; R_1 is hydrogen, alkyl and



where R_2 and R_3 are the same or different and are hydrogen and alkyl or R_2 and R_3 are fused together to form a pyrrolidino or a piperidino ring substituent, m is an integer of 1 or 2; n is an integer of 2 or 3; and a pharmaceutically acceptable acid addition salt thereof.

4,375,472

AMIDINOSULPHONIC ACID DERIVATIVES

Graham J. Durant, Welwyn Garden City; Rodney C. Young, Bengeo, both of England, and Zev Tashma, Jerusalem, Israel, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

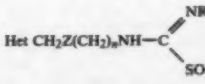
Division of Ser. No. 90,949, Nov. 5, 1979, Pat. No. 4,265,896, which is a division of Ser. No. 940,063, Sep. 6, 1978, Pat. No. 4,210,658. This application Nov. 24, 1980, Ser. No. 209,449

Claims priority, application United Kingdom, Sep. 8, 1977, 37468/77

Int. Cl.³ A61K *31/42, 31/425;* **C07D** *249/08, 285/12*

U.S. Cl. 424—269 **3 Claims**

1. A compound of the formula:



I

where Het is a thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl or thiadiazolyl group optionally substituted on a ring carbon by a lower alkyl, hydroxy, lower alkoxy, halogen, trifluoromethyl, hydroxymethyl or amino group; Z is sulphur or a methylene group; n is 2 or 3 and R is hydrogen, lower alkyl or Het $CH_2Z(CH_2)_n$—. Het being attached at a ring carbon, in neutral form or in the form of a pharmaceutically acceptable salt thereof.

3. A method of blocking histamine H_2-receptors which comprises administering to an animal an effective amount to block said receptors of a compound of claim 1.

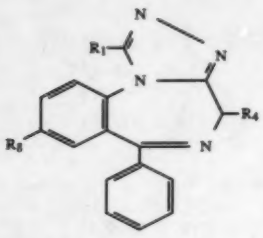
4,375,473

METHOD

Allan D. Rudzik, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 4, 1982, Ser. No. 336,797
Int. Cl.³ A61K *31/41*
U.S. Cl. 424—269 6 Claims

1. A method of treating hypertension in mammals which comprises administering to a mammal suffering from said disease an amount of a compound of formula I



I

wherein R_1 is hydrogen or alkyl of 1 to 3 carbon atoms;
wherein R_4 is hydrogen or methyl; and
wherein R_8 is hydrogen or halogen;
or a pharmacologically acceptable acid addition salt thereof, effective to reduce the mammal's systemic arterial blood pressure.

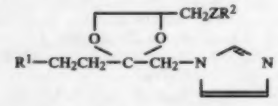
4,375,474

DIOXALANE CONTAINING IMIDAZOLE COMPOUNDS, COMPOSITIONS AND USE

Keith A. M. Walker, Los Altos Hills, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

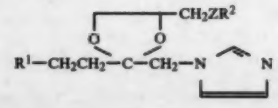
Filed Feb. 11, 1982, Ser. No. 347,832
Int. Cl.³ C07D *405/06;* A61K *31/415*
U.S. Cl. 424—273 R 56 Claims

1. A compound of the formula:



wherein:
Z is oxygen or sulfur;
R^1 is phenyl optionally substituted with one or more substituents selected from the group consisting of halo, lower alkyl, lower alkoxy and trifluoromethyl;
R^2 is phenyl or benzyl wherein the phenyl ring of R^2 is optionally substituted by one or more substituents selected from the group consisting of halo, lower alkyl, lower alkoxy and trifluoromethyl; or a phenyl optionally substituted by halo, lower alkyl, lower alkoxy and trifluoromethyl;
and the antimicrobial acid addition salts thereof.

54. A composition useful for inhibiting the growth of fungi, bacteria or protozoa which comprises an effective amount of a compound of the formula



in admixture with a suitable carrier;
wherein:
Z is oxygen or sulfur;
R^1 is phenyl optionally substituted with one or more substituents selected from the group consisting of halo, lower alkyl, lower alkoxy and trifluoromethyl;
R^2 is phenyl or benzyl wherein the phenyl ring of R^2 is optionally substituted by one or more substituents selected from the group consisting of halo, lower alkyl, lower alkoxy and trifluoromethyl; or a phenyl optionally substituted by halo, lower alkyl, lower alkoxy and trifluoromethyl;
or an antimicrobial acid addition salt thereof.

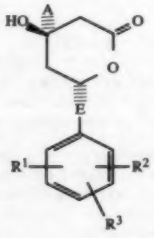
4,375,475

SUBSTITUTED PYRANONE INHIBITORS OF CHOLESTEROL SYNTHESIS

Alvin K. Willard, Wilmington, Del.; Frederick C. Novello, Berwyn, Pa.; William F. Hoffman, and Edward J. Cragoe, Jr., both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 140,323, Apr. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 67,574, Aug. 1, 1979, abandoned. This application Feb. 11, 1981, Ser. No. 233,521
Int. Cl.³ A61K *31/365;* C07D *309/30*
U.S. Cl. 424—279 18 Claims

1. A compound of structural formula



wherein
A is H or methyl;
E is —CH=CH—, or —CH_2CH_2—;
R_1, R_2 and R_3 are each selected from
halogen,
C_{1-4}alkyl,
C_{1-4}haloalkyl,
substituted phenyl in which the substituents are
halo,
C_{1-4}alkyl, or
C_{1-4}alkoxy, and
R_4O in which R_4 is
phenyl,
halophenyl, or
substituted phenyl-C_{1-3}alkyl wherein the substituents are selected from halogen and C_{1-4}haloalkyl;
all of the compounds being the enantiomer having a 4 (R) configuration in the tetrahydropyran moiety of the trans racemate.

4,375,476

INSECTICIDAL (2,6-DIMETHYL-3-SUBSTITUTED PHENYL)METHYL CYCLOPROPANECARBOXYLATES

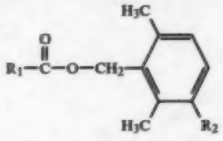
Angeline B. Cardis, Florence, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 196,945, Oct. 14, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,846

Int. Cl.³ C07C 69/74, 69/743; A01N 53/00

U.S. Cl. 424—302 10 Claims

1. Insecticidal and acaricidal (2,6-dimethyl-3-substituted phenyl)methyl cyclopropanecarboxylates of the formula



wherein R_1 is selected from 3-(2,2-dihaloethenyl)-2,2-dimethylcyclopropyl, 3-(2-halo-3,3,3-trifluoropropenyl)-2,2-dimethylcyclopropyl, and 2,2,3,3-tetramethylcyclopropyl and R_2 is selected from nitro, isothiocyanato, and amino.

9. An insecticidal or acaricidal composition comprising an insecticidally or acaricidally effective amount of at least one compound of claim 1 in admixture with an agriculturally acceptable carrier.

4,375,477

FLUORINATED METHYL BETA-ALANINE DERIVATIVES

Philippe Bey, Strasbourg; Michael Jung, Illkirch-Graffenstaden, both of France, and Fritz Gerhart, Willstaett, Fed. Rep. of Germany, assignors to Merrell Toraude et Compagnie, France

Filed Jul. 21, 1980, Ser. No. 170,396

Claims priority, application United Kingdom, Jul. 26, 1979, 7926030; Jan. 25, 1980, 8002553

Int. Cl.³ C07C 101/10; A61K 31/195

U.S. Cl. 424—319 9 Claims

1. 3-amino-3-fluoromethylpropionic acid or a pharmaceutically acceptable salt thereof.

6. A method of inhibiting γ-aminobutyric acid transaminase in a patient in need thereof which comprises administering to said patient an effective γ-aminobutyric acid transaminase inhibiting amount of 3-amino-3-fluoromethylpropionic acid or 3-amino-3-difluoromethylpropionic acid, or a pharmaceutically acceptable salt thereof.

7. A method of treating a patient having a disorder of the central nervous system function characterized in a low level of brain γ-aminobutyric acid which comprises administering an effective γ-aminobutyric acid transaminase inhibiting amount of 3-amino-3-fluoromethylpropionic acid or 3-amino-3-difluoromethylpropionic acid, or a pharmaceutically acceptable salt thereof.

4,375,478

AMINOBENZOIC ACID DERIVATIVES

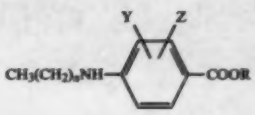
Bruce W. Horrom, Waukegan, and Herman H. Stein, Skokie, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 2, 1982, Ser. No. 354,117

Int. Cl.³ A61K 31/195; C07C 101/60

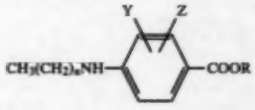
U.S. Cl. 424—319 12 Claims

1. A compound of the formula



wherein Y and Z independently of one another denote hydrogen, halo or trihalomethyl, with the proviso that Y and Z cannot both be hydrogen, R is hydrogen or loweralkyl, n is 5 to 19, and pharmaceutically acceptable salts thereof.

9. A method of treating hypercholesteremia comprising administering to a patient in need of such treatment a therapeutically effective amount of an antihypercholesteremic agent of the formula



wherein Y and Z independently of one another denote hydrogen, halo or trihalomethyl, with the proviso that Y and Z cannot both be hydrogen, R is hydrogen or loweralkyl, n is 5 to 19, and pharmaceutically acceptable salts thereof.

4,375,479

INDANYL DERIVATIVES AND USE

Eberhard Schroeder, deceased, late of Berlin, Fed. Rep. of Germany (by Kirsten and Christian Shroeder, executors), and Clemens Rufer, Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

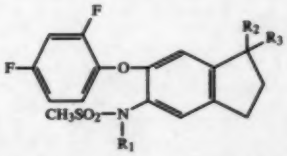
Filed Jan. 27, 1982, Ser. No. 343,066

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3103372

Int. Cl.³ A61K 31/18; C07C 143/75

U.S. Cl. 424—321 12 Claims

1. An indanyl derivative of the formula



wherein

R_1 is hydrogen, methylsulfonyl, or acetyl,

R_2 and R_3 jointly are oxo or oximino, or separately each is hydrogen, or

R_2 is hydrogen and R_3 is hydroxy or amino, or, when R_3 is amino, a physiologically acceptable salt thereof with an acid.

12. A method of treating inflammation in a patient in need of such treatment comprising administering an antiinflammatory amount of a compound of claim 1.

4,375,480

FACIAL SKIN ACTIVATOR EMULSION AND METHOD OF SKIN MOISTURIZING AND CLEANSING

William D. Soma, 17436 Tarzana St., Encino, Calif. 91316

Filed Jun. 22, 1981, Ser. No. 275,633
Int. Cl.³ A61K 47/00
U.S. Cl. 424—358 2 Claims

1. An improved method of treating human skin to moisturize and cleanse it, said method comprising:

(a) applying to and massaging completely into human skin an emulsion having the following essential composition:

Ingredients	Parts by weight
water	50–80
glycerin	5–10
Triethanolamine emulsifier selected from the group consisting of polyoxyethylene sorbitan monopalmitate, polyoxyethylene sorbitan monoleate, polyoxyethylene sorbitan monostearate and mixtures	0.5–1
unsaturated vegetable oil	0.1–0.5
cetyl alcohol	8–35
lanolin oil	0.1–0.5
emulsifier selected from the group consisting of sorbitan palmitate, sorbitan oleate; sorbitan stearate and mixtures thereof	0.8–3
	2.5–4

(b) flooding said skin with water and,

(c) maintaining said flooding until said water penetrates into and moisturizes and cleanses said skin, said emulsion absorbing said water and aiding said moisturizing.

4,375,481

PROCESS FOR PRODUCTION OF ROE-LIKE MULTILAYER SPHERICAL STRUCTURE

Kiyoaki Kuwabara, and Masaeori Jyouraku, both of Uozu, Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,286
Int. Cl.³ A23L 1/04; A23J 3/00
U.S. Cl. 426—93 4 Claims

1. In a process for producing an edible roe-like multilayer spherical structure composed of at least two layers including an inner layer and an outer layer occluding the inner layer, which comprises synchronously discharging at least two edible materials through a multi-tubular nozzle having at least two different passages including an inner passage and an outer passage surrounding the inner passage and subjecting the resulting multilayer spherical structure to chemical gelling treatment with a metal ion acceptable for human intake, the outer layer in said resulting multilayer spherical structure being chemically gelable with said metal ion; the improvement wherein

(i) said at least two edible materials are at least two edible aqueous sol materials having different properties of being chemically gelled with a Ca ion, and

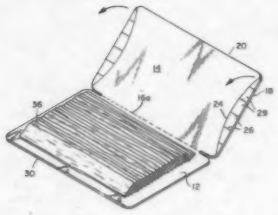
(ii) among said edible aqueous sol materials, the material forming the inner layer is a material which is convertible to a softer aqueous gel than the material forming the outer layer upon chemical gelling and selected from the group consisting of locust bean gum, agar, carrageenan, guaran, konjac flower, gum arabic, tragacanth gum, guar gum, xanthan gum, tamarind gum, kuzu starch, wheat starch, potato starch, dextrin, a starch phosphate sodium salt, starch sodium glycolate, albumin, casein, gelatin and a metaprotein, and the material forming the outer layer is selected from the group consisting of pectin, alginic acid, a water-soluble salt of alginic acid, wheat protein, soybean protein, zein and poly sodium acrylate.

4,375,482

PACKAGE INCLUDING PRODUCT SUPPORT INSERT

Raymond V. Marouszek, and Walter J. Oppermann, both of Neenah, Wis., assignors to James River-Dixie/Northern, Inc., Greenwich, Conn.

Filed Aug. 1, 1980, Ser. No. 174,553
Int. Cl.³ B65D 85/62, 81/20, 77/24, 75/38
U.S. Cl. 426—124 13 Claims



12. A filled and vacuum sealed package comprising:

a stiffening packaging element having a supporting panel and a retaining panel;

a sliced product in shingled array on said supporting panel and covered by said retaining panel;

and an enclosing film conforming to said package stiffening element and forcing said element to conform closely to said product;

said supporting and retaining panels on said packaging element each being generally rectangular, having two longer sides and side edges defining the length of each panel and two shorter ends and end edges defining the width of each panel, and being joined together by a hinge line along common side edges, such that said retaining panel overlies and covers said supporting panel and said product; and

said retaining panel having on each end thereof, a substantially continuous arcuate line of weak bending resistance extending from the vicinity of the intersections of said common side edge and said end edges, inwardly of said end edges, across the width of said retaining panel, to the adjoining intersection of the same respective end edges and the opposite side edge, wherein portions of said retaining panel between said end edges and said lines of weak bending resistance are collapsed by said enclosing film into engagement with said sliced product upon vacuum sealing of the package to form a substantially smooth surface upon which the enclosing film conforms and the corresponding end edges of said supporting panel.

4,375,483

FAT COMPOSITION CONTAINING SALT, LECITHIN AND HYDROPHILIC SILICA

Charles E. Shuford; Faith D. Clark, and Brenda J. Russell, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 23, 1981, Ser. No. 256,278
Int. Cl.³ A23D 5/00, 5/02
U.S. Cl. 426—330.6 23 Claims

23. A method for providing a flavor-enhancing liquid fat composition which contains an edible liquefiable fat in an amount of at least about 90% by weight of the composition, a heat-stable suspension of dispersed salt in an amount of from about 1.5 to about 3% by weight of the composition, at least about 50% by weight of the salt having a particle size of from about 1 to about 40 microns, and lecithin in an amount of from about 0.1 to about 0.5% by weight of the composition, said method comprising the steps of:

(a) adding to the composition a hydrophilic fumed silica having particles with an average surface area of from about 130 to about 400 $m.^2/g.$ and being in an amount of from about 1 to about 2% by weight of the salt; and
(b) mixing the composition to substantially uniformly disperse the salt, lecithin and silica in the fat.

4,375,484

FROZEN BATTER AND PROCESS

Charleston R. Lee, Weston, Conn.; Joseph J. Russo, New Windsor; Shirley A. Jeter, Bronx, and Thomas P. Sullivan, Lake Carmel, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,381
Int. Cl.³ A21D *10/00*
U.S. Cl. 426—549 **21 Claims**

1. An aqueous coating batter composition, said batter being capable of extended storage in the frozen state followed by 40° F. storage for at least 14 days without the formation of sugar or growth of bacteria and said batter containing, all percents being by weight of the batter composition:
(a) a continuous aqueous phase comprising from 20 to 85% water, from 3 to 30% flour which has been heat treated under conditions effective to eliminate substantially all viable microorganisms and to inactivate enzyme activity, from 1 to 20% of a starch, an amount of a gum effective to thicken the batter and provide a crisp mixture upon cooking, from 0.02 to 1.0% of food preservatives and from 0.005 to 1.0% of oleoresins extracted from natural spices; and,
(b) a discontinuous fat phase comprising from 0.3 to 55% of a fat and from 0.025 to 10% of an emulsifier.

4,375,485

PROCESS FOR PREPARING WHIPPING CREAM AND WHIPPING CREAM PRODUCTS

Adrianus H. M. van Genaip, Boxtel, Netherlands, assignor to DMV-Campina B.V., Veghel, Netherlands

Filed Aug. 21, 1981, Ser. No. 295,011
Claims priority, application Netherlands, Aug. 22, 1980, 8004765
Int. Cl.³ A23C *13/14*
U.S. Cl. 426—570 **7 Claims**

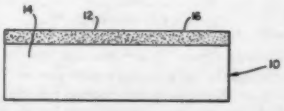
1. A process for preparing instantly whippable whipping cream and whipping cream products containing surfactants, which comprises separating butterfat and lactic acid from milk or milk products; preparing surfactants of lactic acid esters of monoglycerides or surfactants of mixtures of lactic acid esters of monoglycerides and monoglycerides from the butterfat and the lactic acid; mixing said surfactants with butterfat; and emulsifying the surfactants and butterfat mixture with a solution containing milk protein and milk sugar to form the whipping cream.

4,375,486

PROCESS OF MAKING A DIELECTRIC PRODUCT

Philip J. Clough, Gorham, Me., assignor to Ludlow Corporation, Needham Heights, Mass.

Division of Ser. No. 167,361, Jul. 10, 1980, Pat. No. 4,303,720, which is a continuation-in-part of Ser. No. 913,250, Jun. 6, 1978, abandoned. This application Jul. 14, 1981, Ser. No. 283,345
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—121 **6 Claims**



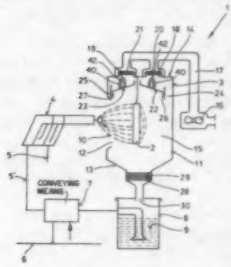
1. A process for making a dielectric paper sheet of the type useful in dielectric printing processes and having a dielectric coating over a paper substrate, said process comprising
(1) coating one side of said substrate, without the use of vaporizable liquid carrier vehicle, with a thermoplastic dielectric coating material consisting essentially of at least 40% of inorganic dielectric filler, by weight, suspended therein and a thermoplastic matrix for said filler;
(2) impregnating said paper substrate with an inorganic salt humectant which, at relative humidities of from 20 to 70% at 25° C., imparts electroconductivity to said substrate, and
(3) solidifying such coating material on said substrate, thereby forming a discontinuous coating, with no substantial impregnation of said coating into said substrate, thereby obtaining excellent electrical and mechanical definition between said substrate and said coating.

4,375,487

INSTALLATION FOR POWDER-COATING WORK PIECES

Willy Huber, Altstatten, Switzerland, assignor to J. Wagner AG, Switzerland

Filed Mar. 31, 1981, Ser. No. 249,652
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012877
Int. Cl.³ B05D *1/06*; B05B *7/00*
U.S. Cl. 427—195 **8 Claims**



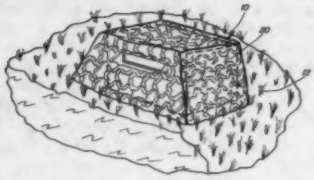
2. In a method for coating a work piece suspended in a chamber which is in turn connected to an exhaust system having the step of
spraying a cloud of coating material toward the work piece,
improvement steps comprising:
generating upwardly oriented forces by using the exhaust system to partly evacuate an upper end of the chamber;
balancing the downwardly oriented force of gravity exerted on each particle of coating material by means of the upwardly oriented forces such that each particle of coating material in the cloud is suspended for a selected period of time in the vicinity of the work piece;
depositing a coating of material from the cloud onto the work piece;
removing a portion of the residual non-deposited coating material from the top of the chamber through the exhaust system;
removing any remaining suspended and non-deposited non-coating material through the floor of the chamber so that it may be recirculated and used again;
filtering the portion of residual non-deposited coating material being removed from the chamber through the exhaust system as that portion is leaving the chamber; and
deflecting residual non-deposited coating material being removed from the chamber by said exhaust system from falling onto the work piece.

4,375,488

CAMOUFLAGE MATERIAL

Mark J. Hogan, Lake Helen, Fla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 15, 1982, Ser. No. 368,744
Int. Cl.³ F41H 3/00
U.S. Cl. 428—17 25 Claims



1. A camouflage material comprising a sheet of material having two dimensions, a plurality of spaced apart rows of cuts extending across the sheet in the direction of each of said dimensions, each cut having at least oneleg portion and an inverted base portion with the leg portion extending at an angle to the direction of the respective row of which the cut is a part, at least some of the cuts in each row in either direction extending between other cuts in that same row, and at least some of the cuts in each row in one said direction extending between the cuts of the rows in the opposite direction, so that the rows of cuts in both directions interlock whereby stretching said material in either direction extends the inverted base portions of the cuts in the rows transverse to the stretched direction in a uniform manner out of the plane of the sheet.

4,375,489

VINYL ESTER POLYMER CONCRETE COMPOSITIONS COMPRISING FLY ASH

Larry C. Muszynski, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 3, 1981, Ser. No. 250,979
Int. Cl.³ C08K 3/36; C08G 59/02
U.S. Cl. 428—36 20 Claims

1. A curable polymer concrete composition, suitable for articles of construction, comprising

(1) from about 3% to about 15% by weight of a vinyl ester composition prepared by esterifying an epoxy resin containing at least one vicinal-epoxy group in the molecule with an ethylenically unsaturated carboxylic acid,

(2) from about 85% to about 97% by weight of an aggregate composition comprising

(a) from about 50% to about 95% by weight of sand,

(b) from about 5% to about 50% by weight of fly ash, and

(3) a free-radical initiator.

4,375,490

PHOTOGRAPHIC FILM SPLICE

Gerald A. Jensen, Plymouth, and Ted G. Merry, Lindstrom, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

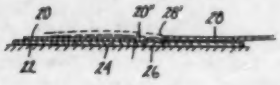
Division of Ser. No. 207,453, Nov. 17, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,765
Int. Cl.³ B32B 3/10
U.S. Cl. 428—60 3 Claims

1. In combination:

a first strip of photographic film having a top and bottom surface;

a second strip of photographic film having a top and bottom surface;

a splice tape bonded to the top surfaces of adjacent ends of the first and second strips to splice the first and second strips together with their ends in abutting relationship, the splice tape defining a raised spliced area on the adjacent film strip ends wherein the spliced area has a top surface which is above the top surfaces of the first and second film strip and has an edge generally transverse to a longitudinal axis of the first and second film strips and forms a discontinuity between the top surface of the first film strip and the top surface of the splice tape; and



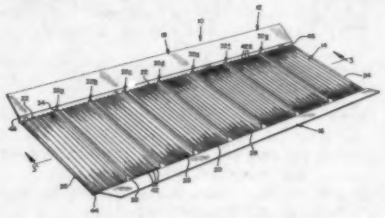
a ramp positioned on and extending above the top surface of the film strip proximate the edge of the splice tape outside of the spliced area, the ramp having an inclined portion positioned on a side of the ramp away from the edge of the splice tape.

4,375,491

ROLL-UP FOLD-UP SLUICE APPARATUS

Steven Honig, P.O. Box 2689, Homer, Ak. 99603

Filed Aug. 31, 1981, Ser. No. 297,782
Int. Cl.³ B03B 5/06; B32B 3/30
U.S. Cl. 428—167 6 Claims



1. Unitary roll-up fold-up sluice apparatus for use in separating sediment by water flow comprising

an elongate flexible mat having upper and lower sides,

means distributed along a central portion in said mat forming plural longitudinally spaced riffles which extend substantially laterally with respect to the mat's long axis and between the central portion's opposed longitudinal edges, each riffle defining an elongate ridge on said upper side and an elongate channel on said lower side, said riffles being dimensioned and longitudinally spaced for accommodating a regular ridge-to-channel nesting when said mat is rolled up in one longitudinal direction relative to the mat's long axis, with the riffles being spaced longitudinally by increasing increments progressing in said one longitudinal direction along said central portion, and

longitudinally extending flaps joined integrally with said edges for folding between upwardly extending positions to form sides in the apparatus, and outwardly extending positions to accommodate rolling up of the mat.

4,375,492

DIELECTRIC RECORD MATERIAL

Richard E. Fox, Dayton, Ohio, assignor to Appleton Papers Inc., Appleton, Wis.

Filed May 22, 1981, Ser. No. 266,565
Int. Cl.³ B41M 5/20
U.S. Cl. 428—212 11 Claims

1. A dielectric record material which comprises:

(a) an electrically conductive substrate and

(b) an electrically insulating coating on the surface of the substrate comprising dielectric polymer material and a color-forming composition comprising:

(i) at least one basic chromogenic material; and

(ii) phenolic material selected from the group consisting of phthaleins and resorcinol monobenzoate which will react with said chromogenic material to form a fixed colored mark upon application of a substantially colorless toner comprising a material which will provide mutual solution or co-melting of said reactants in selective areas of the record material upon the application of heat or solvent vapors.

4,375,493

REFRACTORY COATED AND CONDUCTIVE LAYER COATED FLAME RESISTANT INSULATING FABRIC COMPOSITION

Stephen George, and Thomas H. George, both of Clinton, N.J., assignors to Subtex, Inc., Hartsdale, N.Y.

Continuation-in-part of Ser. No. 294,771, Aug. 20, 1981, Pat. No. 4,358,500. This application Jan. 12, 1982, Ser. No. 338,851

Int. Cl.³ B32B *7/00, 17/06;* **D02G** *3/00*

U.S. Cl. 428—246 **22 Claims**

1. A heat resistant, flexible refractory insulating composition comprising:

(a) a base fabric;

(b) a refractory coating comprising refractory materials, said refractory coating formed on one side of said fabric and said refractory materials being capable of fusing with the base fabric at elevated temperatures; and

(c) a conductive layer coating comprising copper, aluminum, silver or conductive carbon, said conductive coating formed on the other side of said fabric.

4,375,494

POLYESTER FILM COMPOSITES

Richard M. Stokes, Welwyn Garden City, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Feb. 23, 1981, Ser. No. 237,265

Claims priority, application United Kingdom, Mar. 12, 1980, 8008394

Int. Cl.³ B32B *5/16, 27/36*

U.S. Cl. 428—323 **6 Claims**

1. A polyester film composite, which comprises a primary layer comprising a highly crystalline molecularly oriented layer of a first linear polyester and a heat-sealable secondary layer adherent to the primary layer, said second layer consisting essentially of an essentially amorphous second linear polyester containing from 0.005 to 0.2% by weight based upon the weight of the second linear polyester of a finely-divided particulate additive having an average particle size in the range 2 to 10 μm together with 0.1 to 1% based on the weight of the second linear polyester of smaller finely-divided particles having an average particle in the range 0.005 to 1.8 μm dispersed substantially uniform throughout the secondary layer.

4,375,495

NOVEL OPTICALLY ACTIVE POLYMER PREPARATION AND USE

Heimei Yuki, Sakai, and Yoshio Okamoto, Amagasaki, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

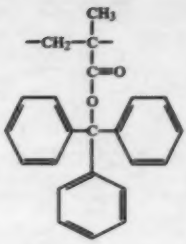
Filed Feb. 17, 1981, Ser. No. 235,233

Claims priority, application Japan, Feb. 19, 1980, 55/19555

Int. Cl.³ B32B *5/16;* **C08F** *18/16*

U.S. Cl. 428—402 **13 Claims**

1. A stereoregular, highly isotactic, optically active polymer comprising recurring structural units of the formula:



and having a polymerization degree of not less than 5, said polymer having a specific rotation $[\alpha]_D^{20}$ of not less than 50° as an absolute value, either + or −.

11. A process for the preparation of a polymer as defined in claim 1, which comprises effecting an ionic polymerization of triphenylmethyl methacrylate in the presence of an optically active anionic catalyst under conditions effective to cause asymmetric polymerization of said triphenylmethyl methacrylate.

4,375,496

METAL CONDENSED PHOSPHATE HARDENER COATED WITH REACTION PRODUCT FROM A METAL ALUMINATE AND/OR A METAL BORATE

Peter M. Nowakowski, Glenshaw; William G. Boberski, Gibsonia, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 4, 1981, Ser. No. 260,228

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—403 **11 Claims**

1. A coated, metal condensed phosphate comprising a core of condensed metal phosphate and a coating on said core comprising a reaction product of acid and a water-soluble and/or water-dispersible metallate selected from the group consisting of metal aluminate, metal borate, and a mixture thereof.

4,375,497

FREE FLOWING SBR BLACK MASTERBATCH POWDER

Paul H. Sandstrom, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 27, 1981, Ser. No. 297,287

Int. Cl.³ C08K *3/04;* **C08J** *3/20;* **B32B** *5/16;* **B44D** *1/02*

U.S. Cl. 428—407 **9 Claims**

1. A process for the production of tack-free, pourable, filler containing elastomer powder which comprises

(a) dispersing a carbon black filler in water;

(b) mixing the thus dispersed carbon black filler with an elastomer latex;

(c) coagulating the thus produced mixture of elastomer latex and carbon black with an acid/alum solution;

(d) partitioning the thus coagulated suspension with a coating resin; and

(e) filtering, washing and drying of the resultant powder, the improvement comprising using as a coating resin a mixture of a styrene/butadiene resin and a styrene/α-methylstyrene or a polystyrene resin wherein the weight ratio of the styrene/butadiene resin to the styrene/α-methylstyrene or polystyrene resin ranges between 4/1 and ¼, said resins containing a mixture of added surfactants, the first being sodium lauryl sulfate and the second being a nonionic isooctyl phenoxy polyethoxy ethanol which contains 10 moles of ethylene oxide in the polyethoxy portion thereof, said mixture of surfactants being added in an amount at least 4 percent by weight and being in a weight ratio of sodium lauryl sulfate to the nonionic surfactant

ranging from 2/1 to ½, and wherein the coagulation temperature ranges from 70° to 90° C.

4,375,498

WET-ON-WET COATING PROCESS

Jean-Jacques Le Minez, Mennecy, and Bernard Schmitt, Compiegne, both of France, assignors to Peintures Corona S.A., Valenciennes, France

Filed Jul. 24, 1981, Ser. No. 286,435

Claims priority, application France, Feb. 9, 1980, 80 18945

Int. Cl.³ B32B *15/08*; B05D *1/36*; C25D *13/00*

U.S. Cl. 428—416 **31 Claims**

1. A process for coating a substrate comprising:

(A) applying to a substrate at least two coating compositions, at least one of which contains capped polyisocyanate functionality with no free isocyanate groups, and at least one of which contains 1,2-epoxy functionality; said coating compositions being applied to the substrate sequentially without having first cured the initially applied coating and being continuously superimposed upon one another so as to form a multilayered coating;

(B) heating the coated substrate to a temperature sufficient to cure the multilayered coating.

27. A coated article produced by the process of any of claims 1, 2, 3, 4, 6, 7, 8, 15, 16, 20, 21, 22, 23, 25 or 26.

4,375,499

ALUMINUM-TIN BASE BEARING ALLOY AND COMPOSITE

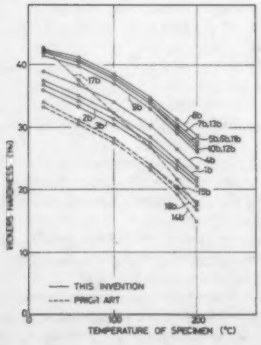
Tamotsu Nara, Toyota, and Soji Kamiya, Nishio, both of Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

Continuation-in-part of Ser. No. 47,336, Jun. 11, 1979, Pat. No. 4,278,740. This application Jan. 23, 1981, Ser. No. 227,876

Claims priority, application Japan, Jul. 11, 1978, 53-84232; Jul. 11, 1978, 53-84233

Int. Cl.³ B32B *15/01*

U.S. Cl. 428—653 **16 Claims**



1. An Al-Sn base, bearing alloy, consisting essentially of: from 3.5 to 35 wt. % of Sn; from 1.2 to 10 wt. % of Cr; and the remainder is Al.

3. A bearing material which is made by applying said bearing alloy as claimed in claim 1 to a backing steel sheet by pressure welding.

4,375,500

ALUMINUM-TIN BASE BEARING ALLOY AND COMPOSITE

Tamotsu Nara, Toyota, and Soji Kamiya, Nishio, both of Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

Continuation-in-part of Ser. No. 136,619, Apr. 2, 1980, Pat. No. 4,340,649, and a continuation-in-part of Ser. No. 47,336, Jun. 11, 1979, Pat. No. 4,278,740. This application Jan. 26, 1981, Ser. No. 228,640

Claims priority, application Japan, Jul. 11, 1978, 53-84232; Jul. 11, 1978, 53-84233

Int. Cl.³ B32B *15/01*

U.S. Cl. 428—653 **9 Claims**

1. An Al-Sn base bearing alloy, consisting essentially of from 3.0 to 35 wt. % of Sn; at least 0.1 wt. % of Cr; at least 1.0 wt. % of Zr, with the proviso that the total amount of Cr and Zr is not more than 10 wt. %; and the remainder is Al.

8. A bearing material which is made by applying said bearing alloy as claimed in claim 1, claim 2, claim 3, claim 4, claim 5 or claim 6 to a backing steel sheet by pressure welding.

4,375,501

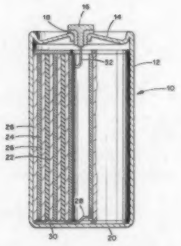
ELECTROCHEMICAL CELL

Emanuel Peled, Even Yehuda, Israel, and Anthony Lombardi, Winchester, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 17, 1980, Ser. No. 197,884

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—94 **11 Claims**



1. An electrochemical cell comprising

an oxidizable anode material;

a cathode current collector; and

an electrolytic solution, in contact with the anode material and the cathode current collector, comprising a solvent of a reducible liquid cathode material and an ionic solute dissolved therein;

the solution having a concentration of ionic solute greater than 3 molar.

4,375,502

ELECTROLYTE FOR A LITHIUM/THIONYL CHLORIDE ELECTRIC CELL, A METHOD OF PREPARING SAID ELECTROLYTE AND AN ELECTRIC CELL WHICH INCLUDES SAID ELECTROLYTE

Jean-Paul Gabano, Poitiers, France, assignor to Societe Anonyme dite: GIPELEC, Levallois-Perret, France

Filed Apr. 30, 1981, Ser. No. 259,186

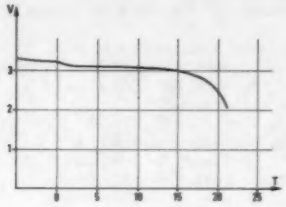
Claims priority, application France, May 7, 1980, 80 10170

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—101 **8 Claims**

1. An electrolyte for an electric cell whose negative active material is constituted by lithium and whose positive active material is constituted by thionyl chloride, the electrolyte containing at least one solvent and at least one solute, said solvent being thionyl chloride and said solute being chosen

from the group which consists of lithium tetrachloroaluminate and lithium hexachloroantimonate, wherein said electrolyte



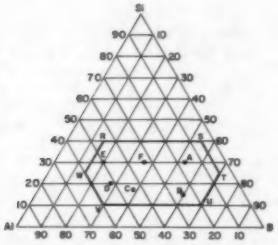
further includes a complex chosen from the group which consists of $AlCl_3,SO_2$ and $SbCl_5,SO_2$.

4,375,503

SODIUM ION CONDUCTING GLASSES AND BATTERIES EMBODYING GLASSES

Andrew Herczog, Hammondsport, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 4, 1981, Ser. No. 317,941
Int. Cl.³ H01M *10/39*
U.S. Cl. 429—104 **9 Claims**



1. A sodium ion conducting glass having a resistivity not over 10^5 ohm-cm at 300° C., being resistant to corrosive attack by liquid sodium and to devitrification, and being composed essentially of, as calculated from the glass batch in cation percent, 32–44% Na, and the remainder essentially a mixture of Si, B and Al wherein the Si content is 10–40% of the total Si+B+Al, the Al is 5–60% of such total, and the B is 15–70%.

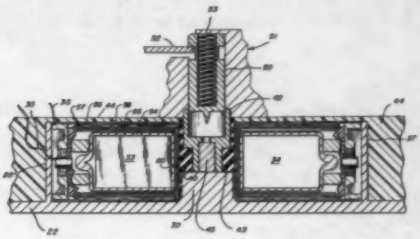
4,375,504

HYDRODYNAMIC RESERVE BATTERY ACTIVATION SYSTEM

Norman E. Jensen, Plymouth, and Peter H. Van Sloun, Hopkins, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 4, 1981, Ser. No. 260,241
Int. Cl.³ H01M *6/30*
U.S. Cl. 429—115 **8 Claims**

1. In combination:
a member having a wall to be indented;
a housing in which the position of said member is fixed;
a pyrotechnic primer in said housing operable to generate a pressure within a confined volume of space proximate to said wall;
means for initiating operation of said primer;



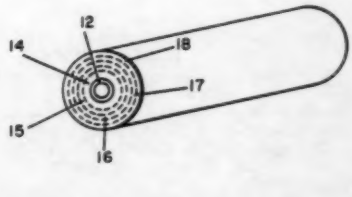
and means in said housing engaging said wall for conducting pressure generated by said primer to said wall in a hydrodynamic manner.

4,375,505

FUSER MEMBER

James S. Newkirk, LeRoy, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,871
Int. Cl.³ B21B *31/08*; B05D *1/02, 1/34*
U.S. Cl. 430—99 **26 Claims**



26. The method of fusing a heat-softenable toner image to a receiver which comprises
pressure contacting a heat-softenable toner image carried by a receiver with a fusing member at a temperature effective to fuse said toner image to said receiver member, said fuser member having a composite layer including:
(1) a first layer of a first material which is a high-temperature resistant elastomer;
(2) a second layer of a second material which is a high-temperature resistant elastomer which is an elastomeric fluoropolymer having a crosslinked polymer comprising repeating units of tetrafluoroethylene and perfluoroalkyl perfluorovinylether; and
(3) a layer intermediate to and continuous with said first and second layers in which the proportion of the first material to the second material gradually varies from substantially only said first material to substantially only said second material.

4,375,506

TIMING LAYERS FOR COLOR TRANSFER ASSEMBLAGES CONTAINING POSITIVE-WORKING REDOX DYE-RELEASERS AND DEVELOPMENT ACCELERATORS

Edward P. Abel, Webster, and Edward Weisberger, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,701
Int. Cl.³ G03C *1/40, 1/10, 5/54*
U.S. Cl. 430—215 **39 Claims**

1. In a photographic assemblage comprising:

(a) a photographic element comprising a support having thereon at least one negative-working photosensitive silver halide emulsion layer having associated therewith a positive-working, redox dye-releaser;

(b) a dye image-receiving layer;

(c) a neutralizing layer for neutralizing an alkaline processing composition;

(d) a first timing layer located between said neutralizing layer and said silver halide emulsion layer; and

(e) a second timing layer located between said first timing layer and said neutralizing layer;

said first and second timing layers being so located that said processing composition must first permeate said timing layers before contacting said neutralizing layer, said neutralizing layer being located on the side of said second timing layer which is farthest from said dye image-receiving layer, the improvement wherein:

(i) said first timing layer has a negative temperature coefficient and has a silver halide development accelerator located therein or in a layer intermediate said first and second timing layers; and

(ii) said second timing layer has a penetration time by said alkaline processing composition that is greater than the penetration time of said first timing layer, so that said neutralizing layer will be permeated by said alkaline processing composition only after development of said silver halide emulsion has been substantially completed.

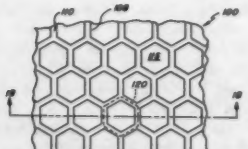
4. In the assemblage of claim 1, the further improvement wherein said first timing layer is an N-substituted acrylamide polymer or copolymer.

4,375,507

IMAGING WITH NONPLANAR SUPPORT MULTICOLOR FILTER ELEMENTS

Keith E. Whitmore, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 184,714, Sep. 8, 1980, which is a continuation-in-part of Ser. No. 8,819, Feb. 2, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,883
Int. Cl.³ G03C *7/00, 5/54*
U.S. Cl. 430—236 **11 Claims**



1. A process comprising

imagewise exposing silver halide through an element comprised of

support means having first and second major surfaces, the support means defining a planar array of microvessels which open toward the first major surface,

a segmented blue filter located in a first set of the microvessels,

a segmented green filter located in a second set of the microvessels,

a segmented red filter located in a third set of the microvessels,

the first, second, and third sets of microvessels forming an interlaid pattern of blue, green and red filter segments,

the support means providing a lateral barrier between adjacent microvessels,

developing silver halide as a function of its exposure,

solubilizing remaining silver halide, and

imagewise transferring the solubilized silver halide to a receiver containing a silver precipitating agent.

4,375,508

PHOTOGRAPHIC COMPOSITIONS AND ELEMENTS SPECTRALLY SENSITIZED WITH NEW METHINE DYES

Yasushi S. Yamamoto, East Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,586
Int. Cl.³ G03C *1/18*
U.S. Cl. 430—588 **9 Claims**

1. In a radiation-sensitive silver halide composition, the improvement wherein said composition is spectrally sensitized by means of a methine dye comprising first and second nuclei joined by a methine linkage, at least said first nucleus comprising a heterocyclic nitrogen ring or ring system having attached to a nitrogen atom thereof, an acetylenically unsaturated hydrocarbon chain terminated by a nucleophilic group.

4,375,509

ANTI-HEMOLYTIC AGENT EMULSIONS

Richard G. Buckles, Basel, Switzerland, and Jan W. Garber, McHenry, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 105,468, Dec. 19, 1979, Pat. No. 4,326,025. This application Nov. 6, 1981, Ser. No. 318,705
Int. Cl.³ A01N *1/02;* A61K *35/14*
U.S. Cl. 435—2 **10 Claims**

1. A blood storage container made of a hemocompatible material, said container also including sufficient quantity of a dispersed phosphate ester containing at least two ester linkages comprising fatty hydrocarbon groups, each of six to 12 carbon atoms, said ester linkages being bonded to the same phosphorous atom, said phosphate ester being present in sufficient amount to cause a reduction in the hemolysis of blood stored in said container for a period of 21 days, when compared with blood under similar storage conditions in the absence of said phosphate ester, said blood container also containing a blood nutrient and stabilizing agent.

4,375,510

SELECTIVE MEDIUM COMPOSITION AND METHOD FOR THE DETECTION OF *ACTINOMYCES VISCOSUS* AND *ACTINOMYCES NAESLUNDII*

Harold V. Jordan, Wellesley Hills, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Mar. 5, 1981, Ser. No. 240,769
Int. Cl.³ C12N *1/00, 1/20;* C12Q *1/04;* C12R *1/04*
U.S. Cl. 435—34 **29 Claims**

1. A selective medium composition for the growth and detection of *Actinomyces viscosus* or *Actinomyces naeslundii,* which composition comprises:

(a) a solid medium selective to induce the growth of *Actinomyces viscosus* or *Actinomyces naeslundii;*

(b) a nutrient agent to induce the substantial growth of *Actinomyces viscosus* or *Actinomyces naeslundii;*

(c) a cadmium compound;

(d) a fluoride compound;

(e) a flavine compound; and

(f) the cadmium compound, the fluoride compound and the flavine compound all present in a concentration sufficient to inhibit the substantially full growth of interfering microorganisms, but in a concentration insufficient to inhibit the substantial growth of *Actinomyces viscosus* or *Actinomyces naeslundii*.

4,375,511

PROCESS TO PRODUCE ACLACINOMYCINS A AND B

Akiko Fujiwara; Tatsuo Hoshino, both of Kamakura, and Masaaki Tazoe, Yokohama, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 22, 1981, Ser. No. 313,534

Claims priority, application United Kingdom, Oct. 27, 1980, 8034537

Int. Cl.³ C12N *1/00;* C12P *19/56;* C12R *1/465*

U.S. Cl. 435—78 5 Claims

1. A process for producing aclacinomycins A and B which comprises cultivating *Streptomyces galilaeus* OBB-731 (FERM-P No. 5402; ATCC 31615) under aerobic condition in an aqueous medium and recovering aclacinomycins A and B from the fermentation broth.

4,375,512

PROCESS FOR PRODUCING LOW CALCIUM XANTHAN GUMS BY FERMENTATION

Joe B. Richmon, El Cajon, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 97,754, Nov. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 44,145, May 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 895,907, Apr. 13, 1978, abandoned. This application Jun. 3, 1981, Ser. No. 270,009

Int. Cl.³ C12R *19/06;* C12P *1/64*

U.S. Cl. 435—104 2 Claims

1. A process of preparing low calcium xanthan gum which comprises growing *Xanthomonas campestris* by the whole culture fermentation of an aqueous medium comprising a fermentable carbohydrate, a nitrogen source, appropriate other nutrients, and a calcium content of 0.37 to 4 ppm calcium per 1% xanthan gum in the completed fermentation broth.

4,375,513

BIOLOGICALLY PURE CULTURE OF *ACTINOPLANES MISSOURIENSIS*

Manuel Debono, Indianapolis; Kurt E. Merkel, Mooresville; Robert E. Weeks, and Herald J. Cole, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 217,962, Dec. 18, 1980, Pat. No. 4,322,406. This application Oct. 9, 1981, Ser. No. 309,965

Int. Cl.³ C12P *1/06;* C12R *1/045*

U.S. Cl. 435—169 2 Claims

1. The biologically pure culture of *Actinoplanes missouriensis* strain ATCC 31683 which when cultured in a nutrient medium under submerged aerobic fermentation conditions, produces antibiotic A-4696 for the subsequent isolation of antibiotic A-4696 factors B_1 and C_{1a}.

2. The biologically pure culture of *Actinoplanes missouriensis* strain ATCC 31683 which when cultured in a nutrient medium under submerged aerobic fermentation conditions, produces antibiotic A-4696 for the subsequent isolation of antibiotic A-4696 factors B_3 and E_1.

4,375,514

PREPARATION AND USE OF RECOMBINANT PLASMIDS CONTAINING GENES FOR ALKALINE PHOSPHATASES

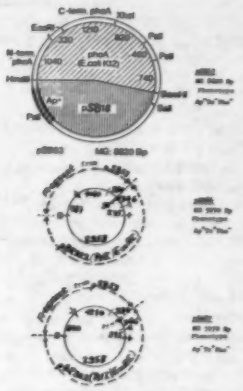
Gerhard Siewert; Werner Boidol, and Joachim Daum, all of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,316

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931999

Int. Cl.³ C12N *15/00, 1/20, 1/00, 9/16*

U.S. Cl. 435—172 46 Claims



1. Substantially biologically pure phoA negative type mutant *E. coli* SB44 (DSM 1606), which is substantially incapable of in vivo recombination.

4,375,515

METHOD FOR PRODUCING MICROBIAL CELLS AND USE THEREOF TO PRODUCE OXIDATION PRODUCTS

Ramesh N. Patel; Ching-Tsang Hou, both of Edison, N.J., and Allen I. Laskin, New York, N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 24,307, Mar. 27, 1979, Pat. No. 4,266,034, which is a continuation-in-part of Ser. No. 896,476, Apr. 14, 1978, abandoned. This application Dec. 11, 1980, Ser. No. 215,248

Int. Cl.³ C12N *9/02*

U.S. Cl. 435—189 8 Claims

1. A process for the production of microbial cells which comprises culturing, under aerobic conditions, in a liquid growth medium comprising assimilable sources of nitrogen and essential mineral salts and a C_1 compound as a source of assimilable carbon, a C_1-utilizing microorganism strain or mutant thereof selected from the group consisting of:

7	*Methylosinus trichosporium*	(CRL 15 PM1)	NRRL B-11,202
8	*Methylosinus sporium*	(CRL 16 PM2)	NRRL B-11,203
9	*Methylocystis parvus*	(CRL 18 PM4)	NRRL B-11,204
10	*Methylomonas methanica*	(CRL M4P)	NRRL B-11,205
11	*Methylomonas methanica*	(CRL 21 PM7)	NRRL B-11,206
12	*Methylomonas albus*	(CRL M8Y)	NRRL B-11,207
13	*Methylomonas streptobacterium*	(CRL 17 PM3)	NRRL B-11,208
14	*Methylomonas agile*	(CRL 22 PM9)	NRRL B-11,209
15	*Methylomonas rubrum*	(CRL M6P)	NRRL B-11,210
16	*Methylomonas rubrum*	(CRL 20 PM6)	NRRL B-11,211
17	*Methylomonas roseceus*	(CRL M10P)	NRRL B-11,212
18	*Methylomonas roseceus*	(CRL M7P)	NRRL B-11,213
19	*Methylobacter chroococcum*	(CRL M6)	NRRL B-11,214

-continued

20	*Methylobacter chroococcum*	(CRL 23 PM8)	NRRL B-11,215
21	*Methylobacter bovis*	(CRL M1Y)	NRRL B-11,216
22	*Methylobacter bovis*	(CRL 19 PM5)	NRRL B-11,217
23	*Methylobacter vinelandii*	(CRL M5Y)	NRRL B-11,218
24	*Methylococcus capsulatus*	(CRL M1)	NRRL B-11,219
25	*Methylococcus minimus*	(CRL 24 PM12)	NRRL B-11,220
26	*Methylococcus capsulatus*	(CRL 24 PM13)	NRRL B-11,221
27	*Methylobacterium organophilum*	(CRL 26 R6)	NRRL B-11,222
28	Pichia sp.	(CRL-72)	NRRL Y-11,328
29	Torulopsis sp.	(A_1)	NRRL Y-11,419
30	Kloeckera sp.	(A_2)	NRRL Y-11,420

said culturing being carried out under conditions effective to produce said cells.

4,375,516

RIGID, WATER-RESISTANT PHOSPHATE CERAMIC MATERIALS AND PROCESS FOR PREPARING THEM

Jeffery L. Barrall, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 351,753, Mar. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 274,156, Jun. 16, 1981, abandoned. This application May 18, 1982, Ser. No. 378,522

Int. Cl.³ C04B *21/00*

U.S. Cl. 501—84 **80 Claims**

1. A process for manufacturing rigid, water resistant phosphate ceramic material, said process comprising the steps of:

preparing a metal oxide comprising from about 11 to about 65 parts by weight calculated on an anhydrous basis of at least one metal oxide selected from the group consisting of Al_2O_3, MgO, CaO or ZnO or the hydrates thereof,

preparing a reaction solution comprising a portion of said metal oxide and from about 80 to about 190 parts by weight of a phosphoric acid solution comprising the equivalent of from about 35 to about 75% by weight of phosphorus pentoxide based on the weight of the acid solution, the water of hydration of said metal oxide being included when calculating the phosphorus pentoxide content,

preparing a mixture comprising the remainder of said metal oxide and about 100 parts by weight of calcium silicate,

adjusting the temperature of said reaction solution to a desired value,

proportionally intermixing said mixture with said reaction solution, and

placing the resulting intermixed material in a desired configuration and allowing the components thereof to interact,

the amount of metal oxide used to prepare the reaction solution and the temperature of the reaction solution being selected so as to approximately predetermine the point in time at which said intermixed material becomes rigid relative to the point in time at which vaporization of the water occurs.

4,375,517

SINTERED CUBIC BORON NITRIDE AND PROCESS FOR PRODUCING THE SAME

Masakazu Watanabe; Akiyasu Okuno; Isamu Fukuura, and Yasushi Matsuo, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 112,052, Jan. 14, 1980, abandoned. This application Jun. 30, 1981, Ser. No. 279,141

Claims priority, application Japan, Jan. 13, 1979, 54-3323

Int. Cl.³ C04B *35/56, 35/58*

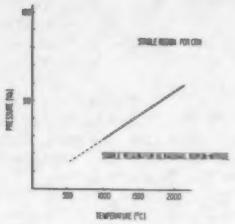
U.S. Cl. 501—87 **5 Claims**

1. A sintered cubic boron nitride consisting of 80 to 20% by volume of the following component (a), with the balance being essentially the following component (b):

(a) cubic boron nitride;

(b) a cermet containing the following sub-components (1), (2) and (3):

(1) about 65 to 92 wt % TiC and/or TiC-TiN, part of which



may be replaced with up to 10 wt % of a carbide, a nitride, a boride and/or a silicate of a transition metal of the group IVa, Va and VIa of the Periodic Table;

(2) about 5 to 15 wt % Fe, Co and/or Ni; and

(3) about 3 to 20 wt % Mo and/or Mo_2C.

4,375,518

RESINOUS PETROLEUM RESIDUE REFRACTORY BINDERS

Francis W. Henry, Jr., Glen Burnie, and Merrill Wood, Jr., Baltimore, both of Md., assignors to General Refractories Co., Bala Cynwyd, Pa.

Filed Mar. 27, 1981, Ser. No. 248,577

Int. Cl.³ C04B *35/52*

U.S. Cl. 501—99 **13 Claims**

1. A refractory comprising a refractory material and a binder, said binder being a resinous petroleum residue having a softening point ranging from 100° F. to 150° F. (38°–65° C.), and being less than 2% insoluble in benzene.

4,375,519

ION EXCHANGE RESINS

Thomas J. Howell, Langhorne, Pa.; William G. Paterson, Wickham, and Ian Pattison, Washington, both of England, assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 904,178, May 8, 1978, Pat. No. 4,246,386, which is a continuation-in-part of Ser. No. 797,716, May 17, 1977, abandoned. This application Sep. 22, 1980, Ser. No. 189,555

Int. Cl.³ C08F *8/00, 8/30, 8/32, 8/36*

U.S. Cl. 521—31 **6 Claims**

1. An ion exchange resin having improved physical strength obtained by attaching a functional group selected from the class consisting of sulfonamide, trialkylamino, tetraalkyl ammonium, carboxyl, carboxylate, sulfonic, sulfonate, hydroxyalkyl ammonium, iminodiacetate, amine oxide, and phosphonate to the crosslinked copolymer prepared by the process of preparing hard, crosslinked discrete copolymer beads by the free radical polymerization in an aqueous dispersion of a monomer mixture comprosed of a major proportion of (a) monovinyl monomer and a minor proportion of (b) crosslinking monomer having at least two active vinyl groups, wherein the improvement comprises conducting the polymerization reaction at a temperature within the range of about 30° to 95° C. with a modifier in admixture with the aforesaid monomer mixture, the modifier being present in a concentration of from about 0.01 to about 10 millimoles per mole of monomers, in the monomer mixture (a) and (b), said modifier being an organic compound containing acetylenic or allylic unsaturation, said organic compound being capable of moderating rate of polymerization, and wherein, when the modifier contains allylic unsaturation, is selected from the group consisting of terpinolene, bicycloheptadiene, dimethyloctatriene, dimer of methyl cyclopen-

tadiene, terpenes, 2-methyl styrene, α-methyl styrene dimer, limonene, cyclohexadiene, methyl cyclohexadiene, camphene, geraniol, farnesol, 2-norbornene, cyclododecatriene, cyclpooctadiene, cyclododecene, allyl benzene and 4-vinyl-1-cyclohexene

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4,375,520

DENSIFICATION OF PARTICULATE MATERIALS

Thomas W. Pennie, Neshanic; Sunil S. Parikh, Bound Brook, and Charles Lowe, Martinsville, all of N.J., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Apr. 10, 1981, Ser. No. 252,764
Int. Cl.[3] C08J 3/20, 9/16; C08K 5/04; C08L 23/00
U.S. Cl. 521—57 28 Claims

1. A composition comprising (a) a hydrophobic-hydrophilic liquid substance selected from the group consisting of nonionic long chain polyamino amides, high molecular weight fatty acid esters, salts of polyamino amides with high molecular weight acids, imidazoline derivatives, unsaturated polyester alkyd resins and plasticizers and (b) a solid, low molecular weight polymer having a molecular weight of from about 2,000 to about 10,000 and a melting point of from about 95° to about 105° C., wherein (a) and (b) are present in the proportions of from about 1 to about 1 to about 1 to about 10.

4,375,521

VEGETABLE OIL EXTENDED POLYURETHANE SYSTEMS

James M. Arnold, Mableton, Ga., assignor to Communications Technology Corporation, Los Angeles, Calif.

Filed Jun. 1, 1981, Ser. No. 269,244
Int. Cl.[3] C08G 18/06
U.S. Cl. 523—173 12 Claims

1. A vegetable oil extended polyurethane system consisting essentially of the reaction product of an isocyanate terminated polyisocyanate with a polyol in the presence of vegetable oil, the vegetable oil being present in a range of from about 1 to 80%, by weight of the total extended system, and being selected from the group consisting of soybean, safflower, corn, sunflower, linseed, oiticica, coconut, cottonseed, peritta, palm, olive, rape and peanut oils and mixtures thereof.

4,375,522

THIXOTROPIC RESTRICTOR, CURABLE AT ROOM TEMPERATURE, FOR USE ON SOLID PROPELLANT GRAINS

John D. Braun, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 21, 1980, Ser. No. 170,355
Int. Cl.[3] F42B 1/00
U.S. Cl. 523—180 4 Claims

1. A solid propellant grain restrictor composition comprising:

a premix containing hydroxyl-terminated polybutadiene with 1% by weight of dissolved 2,2'-methylene-bis(4-methyl-6-tert-butyl) phenol antioxidant, dioctyl adipate, triethanolamine, ferric acetylacetonate, carbon black, hydrated aluminum oxide, and colloidal silicon dioxide;

toluene diisocyanate; and

colloidal silicon dioxide.

4,375,523

CURABLE SILICONE ELASTOMER COMPOSITION

Masayuki Hatanaka, Ora; Atsushi Kurita, Ota; Yoshikane Yokoyama, Tokyo, and Masahiro Kusakabe, Yokohama, all of Japan, assignors to Toshiba Silicone Co., Ltd. and Tokyo Shibaura Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Jul. 23, 1981, Ser. No. 286,069
Claims priority, application Japan, Jul. 24, 1980, 55-100528
Int. Cl.[3] C08K 9/06
U.S. Cl. 523—212 15 Claims

1. A curable silicone elastomer composition comprising the following components (A), (B) and (C):

(A) 100 parts by weight of a polyorganosiloxane having at least two silicon-bonded vinyl groups per molecule;

(B) 1 to 300 parts by weight of fine powder of tungsten carbide; and

(C) a component for crosslinking of said component (A) selected from the group consisting of (1), (2), (3) and (4) shown below:

(1) a combination of (a) 0.1 to 10 parts by weight of a polyorganohydrogen-siloxane having an average of at least two silicon-bonded hydrogen atoms per molecule and (b) 0.000001 to 0.1 part by weight of a platinum catalyst;

(2) a combination of said (a), (b) and (c) 0.00001 part to less than 0.1 part by weight of an organic peroxide except from organohydroperoxide;

(3) a combination of said (a) and (d) 0.00001 part to less than 0.2 part by weight of the reaction product between said (b) and (c); and

(4) 0.1 to 3.0 parts by weight of an organic peroxide except from organohydroperoxide.

14. A composition according to claim 1, further containing 10 to 100 parts by weight of fine powders of silica.

15. A composition according to claim 14, wherein the surface of the fine powders of silica is treated with an organic silicon compound selected from the group consisting of polyorganosiloxane and hexamethyldisilazane.

4,375,524

PROCESS CONTROL FOR FLASH CONCENTRATING SOLUTIONS CONTAINING POLYOLEFINS

Fred Rowe, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 29, 1981, Ser. No. 278,129
Int. Cl.[3] C08J 3/00
U.S. Cl. 523—303 6 Claims

1. A method comprising

(a) flashing a predominantly liquid stream having a first concentration of polymer in a flash zone to form an overhead stream comprising predominantly solvent;

(b) pumping a predominantly liquid bottoms second stream having a second concentration of polymer from the flash zone;

(c) mixing the second stream with a third predominantly liquid stream having a third concentration of polymer to form the first predominantly liquid stream;

(d) establishing a first signal representative of the flow rate of the third stream; and

(e) regulating the flow rate of the second stream in response to said first signal.

4,375,525

USE OF ORGANIC SILICON COMPOUNDS FOR STABILIZING AND BRIGHTENING POLYCARBONATES WHICH ARE FREE FROM PHOSPHITES AND FREE FROM BORIC ACID ESTERS

Karsten Idel, Krefeld; Wolfgang Cohnen, Leverkusen; Dieter Freitag, Krefeld, and Ottfried Schlak, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,621

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920450

Int. Cl.³ C08K *5/54*

U.S. Cl. 524—108 6 Claims

1. A thermoplastic polycarbonate composition characterized in the absence of phosphites and boric acid ester therefrom comprising:

(i) 0.01 to 1.0 percent by weight of an organic silicon compound of the formula

$$Si\text{-}(OR_2)_b$$

wherein b is 4 and R_2 is selected from the group consisting of (3-methyl-oxetan-3-yl)-methyl, (3-ethyl-oxetan-3-yl)-methyl, (3-amyl-oxetan-3-yl)-methyl, 2-methoxyethyl, 3-methoxy-propyl, 3-ethoxy-propyl, 3-(thiomethyl)-propyl, (5-ethyl-1,3-dioxan-5-yl)-methyl and 2,3-epoxy-propyl, C_2–C_{18} alkenyl and C_5–C_{10} cycloalkyl and

(ii) aromatic polycarbonate resin prepared by a solution process.

4,375,526

ANIONIC POLYMERS FOR REDUCTION OF VISCOSITY OF A MAGNESIUM HYDROXIDE FILTER CAKE PASTE

John D. Zupanovich; John G. Myers, both of Pittsburgh, and Jerry L. Walker, Coraopolis, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1981, Ser. No. 323,329

Int. Cl.³ C08K *3/22*

U.S. Cl. 524—436 1 Claim

1. A method for reducing the viscosity of magnesium hydroxide filter cake paste which comprises adding a copolymer of ethylene and maleic anhydride to the magnesium hydroxide filter cake paste.

4,375,527

FIBERGLASS REINFORCED PLASTIC INSULATING MEMBER SUBMITTED TO MECHANICAL EFFORTS WITHIN A HIGH-VOLTAGE SWITCHING ENCLOSURE CONTAINING SULPHUR-HEXAFLUORIDE GAS

Hansruedi Zahner, deceased, late of Oberentfelden, Switzerland (by Martin H. Hochstrasser, administrator), assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Oct. 30, 1980, Ser. No. 202,422

Claims priority, application Switzerland, Nov. 5, 1979, 9903/79

Int. Cl.³ C08K *3/40*

U.S. Cl. 524—492 1 Claim

1. A fiberglass-reinforced plastic electric-insulating member which is subject to mechanical forces and in contact with decomposition products of SF_6 gas which comprises a fiberglass reinforcement made of a low alkali glass containing neither boron nor boron-containing compounds, said glass having the following composition in percentages by weight:

50–65% SiO_2

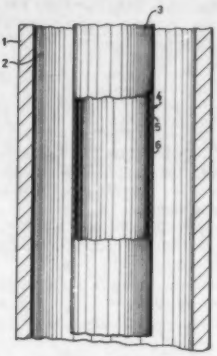
20–30% Al_2O_2

5–20% MgO

2–10% CaO

the sum of the weight percentages of CaO and MgO lying in the range of 15 to 25%,

the ratio of the weight percentage of SiO_2 to that of Al_2O_3 being at least 2 and at the most 2.5, and



the ratio of the weight percentage of MgO to that of SiO_2 not exceeding 0.3.

4,375,528

WATER SOLUBLE OIL MODIFIED IMIDIZED POLYESTERS

Daniel J. Lange, St. Louis, Mo., assignor to The P. D. George Company, St. Louis, Mo.

Filed May 26, 1981, Ser. No. 266,997

Int. Cl.³ C09D *3/56, 3/64, 3/66, 5/25*

U.S. Cl. 524—538 31 Claims

1. A water soluble and/or dispersible composition comprising a fatty oil or fatty acid modified, imidized polyester, said polyester being derived from aliphatic, cycloaliphatic or aromatic diols; polyhydroxy-alkanes other than diols; aliphatic, cycloaliphatic and/or aromatic dicarboxylic acids; and aromatic tricarboxylic acids.

4,375,529

HYDROGENATION OF RESIDUAL MONOMERS IN PARTIALLY POLYMERIZED ACRYLAMIDE COPOLYMERS IN LATEX FORM

Dodd W. Fong, and Ronald J. Allain, both of Naperville, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Aug. 3, 1981, Ser. No. 289,637

Int. Cl.³ C08F *2/32*

U.S. Cl. 524—555 1 Claim

1. A method of reducing the acrylamide—sodium acrylate content of water-in-oil emulsions of partially polymerized acrylamide—sodium acrylate copolymers which contain not more than 50% by weight of sodium acrylate which comprises hydrogenating the acrylamide—sodium acrylate in the presence of a nickel hydrogenation catalyst utilizing a temperature ranging between 20°–50° C. and at a pressure between 100–150 psi.

4,375,530

POLYESTER OF 2,6-NAPHTHALENE DICARBOXYLIC ACID, 2,6-DIHYDROXY NAPHTHALENE, TEREPHTHALIC ACID, AND HYDROQUINONE CAPABLE OF FORMING AN ANISOTROPIC MELT

Ian L. Hay, Warren; Anthony J. East, Madison, and Gordon W. Calundann, North Plainfield, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,372

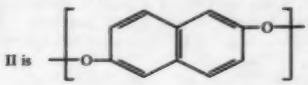
Int. Cl.³ C08G *63/18*

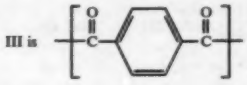
U.S. Cl. 524—605 18 Claims

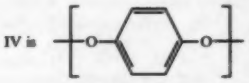
1. A melt processable polyester capable of forming an anisotropic melt phase at a temperature below approximately 350°

C. consisting essentially of the recurring moieties I, II, III, and IV which are free of ring substitution wherein:

I is .

II is  .

III is  , and

IV is  .

wherein said polyester comprises approximately 20 to 30 mole percent of moiety I, approximately 20 to 30 mole percent of moiety II, approximately 20 to 30 mole percent of moiety III, and approximately 20 to 30 mole percent of moiety IV, and wherein the total molar concentration of moieties I and III is substantially identical to the total molar concentration of moieties II and IV.

4,375,531

HIGH IMPACT VISBROKEN POLYMERIC BLENDS

James F. Ross, Naperville, Ill., assignor to Northern Petrochemical Company, Omaha, Nebr.

Filed Jan. 11, 1982, Ser. No. 338,412

Int. Cl.³ C08L *23/26, 23/10, 53/00*

U.S. Cl. 525—93 **10 Claims**

1. A high melt flow rate, high impact, visbroken polymeric composition comprising a a high propylene content first polymeric component which is selected from the group consisting of block copolymers of propylene and ethylene, reactor-made intimate mixtures of polypropylene and randomly oriented copolymers of propylene and ethylene, and blends of polypropylene and randomly oriented copolymers of propylene and ethylene and a second polymeric component having a higher impact than said first component, and which is selected from the group consisting of low density polyethylene, ethylene-vinyl acetate copolymers, acrylate-modified polyethylenes, high density polyethylene, ethylene-propylene rubber (EPR or EPDM), and blends thereof, wherein the two components are first blended and then visbroken.

4,375,532

MULTIPHASE CORE/SHELL POLYMERS

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 202,957, Nov. 3, 1980, Pat. No. 4,306,040. This application Aug. 30, 1981, Ser. No. 306,972

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.³ C08F *279/02, 255/06, 291/02*

U.S. Cl. 525—310 **4 Claims**

1. A multiphase core//shell polymer comprising about 50 to about 90 parts by weight of a crosslinked elastomer core and about 10 to about 50 parts by weight of a rigid thermoplastic polymer shell comprising from about 1 to about 25 parts by weight of an interpolymerized C_1 to C_4 monoalkyl maleate or fumarate, from about 20 to about 80 parts by weight of interpolymerized styrene, from about 0 to about 79 parts by weight of an interpolymerized C_1 to C_8 alkyl acrylate or methacrylate and from about 0 to about 45 parts by weight of interpolymerized acrylonitrile or methacrylonitrile based on 100 parts by weight of shell interpolymer, wherein the core of the multiphase core//shell polymer has a weight average particle diameter in the range of about 0.3 to about 0.8 micron and the rigid shell has a thickness of at least about 0.025 micron and wherein the glass transition temperature of the rigid thermoplastic polymer shell is at least about 35° C.

4,375,533

POLYMERIZATION PROCESS FOR CARBOXYL CONTAINING POLYMERS

Hung S. Park, Avon Lake, and August H. Jorgensen, Jr., Rocky River, both of Ohio, assignors to The BF Goodrich Company, Akron, Ohio

Filed Jul. 8, 1981, Ser. No. 281,535

Int. Cl.³ C08F *22/04*

U.S. Cl. 526—193 **12 Claims**

1. A method for polymerizing olefinically unsaturated carboxylic acids containing at least one activated carbon to carbon olefinic double bond and at least one carboxyl group in an organic media consisting essentially of organic liquids in which said carboxylic acids are at least partially soluble, and which are substantially a nonsolvent for the polymers of said carboxylic acids, in the presence of free radical forming catalyts and nonionic surface active agents having HLB values in the range of about 1 to about 10.

4,375,534

METHOD OF MAKING A CONTACT LENS MATERIAL AND A LENS THEREFROM

Jim I. Main, 3044 Walton St., Apt. #7, Jacksonville, Fla. 32207

Filed Aug. 14, 1980, Ser. No. 177,901

Int. Cl.³ C08F *4/34, 2/02*

U.S. Cl. 526—227 **8 Claims**

1. In a method of manufacturing a soft contact lens material from hydroxy-ethyl-methacrylate and a cross linking agent, the improvement comprising adding a carbon decolorizing agent to said hydroxy-ethyl-methacrylate to prevent it from curdling and gelling during distilling, and distilling the hydroxy-ethyl-methacrylate to leave a residue including the carbon decolorizing agent and to provide a hydroxy-ethyl-methacrylate distillate adapted for subsequent polymerization.

4,375,535

STABLE LIQUID, AMYLOPECTIN STARCH GRAFT COPOLYMER COMPOSITIONS

Adrian P. Kightlinger; Edwin L. Speakman, and Grant T. Van Duzee, all of Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 144,071, Apr. 28, 1980, abandoned. This application Jan. 9, 1981, Ser. No. 223,629

Int. Cl.³ C08L *3/02*; D06M *15/22*

U.S. Cl. 527—313 **36 Claims**

1. A stable aqueous polymeric dispersion comprised of at least 25% solids by weight of a graft copolymer of at least one vinyl monomer and a derivatized and thinned amylopectin starch with a degree of substitution of at least about 0.01 and an intrinsic viscosity of not less than about 0.12 dl/g wherein the starch/monomer ratio of the graft copolymer is less than about 100/25 by weight.

18. The process for producing a stable aqueous polymeric dispersion comprised of at least 25% solids by weight of a starch graft copolymer of at least one vinyl monomer and a derivatized and thinned amylopectin starch which comprises forming a derivatized and thinned amylopectin starch with a degree of substitution of at least about 0.01 and an intrinsic viscosity of not less than about 0.12 dl/g and forming a graft copolymer of said derivatized and thinned starch and at least

one vinyl monomer by means of an initiator which acts to initiate graft copolymerization onto the starch to the substantial exclusion of the initiation of homopolymerization or copolymerization of said vinyl monomer(s) and wherein the starch/monomer ratio of the thinned and derivatized starch to the vinyl monomer(s) is less than about 100/25 by weight.

4,375,536

POLYPHENYLQUINOXALINES CONTAINING PENDANT PHENYLETHYNYL AND ETHYNYL GROUPS

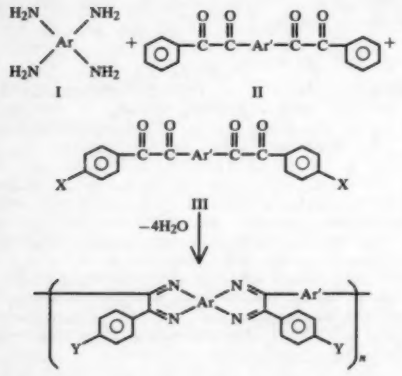
Hans M. Mark, Acting Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Paul M. Hergenrother, Yorktown, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 12, 1981, Ser. No. 320,621

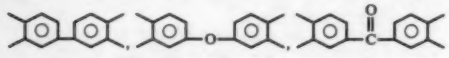
Int. Cl.³ C08G 73/06

U.S. Cl. 528—125 **22 Claims**

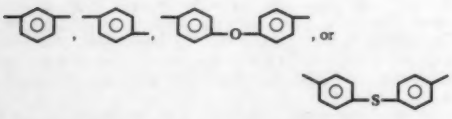
1. A poly(phenylquinoxaline) polymer consisting essentially of repeating units and synthesized from the reaction of (I) aromatic bis(o-diamines) with (II) aromatic bis(α-diketones) and (III) aromatic bis(ethynylphenyl-α-diketones) or aromatic bis(phenylethynyl-α-diketones) according to the reaction scheme:



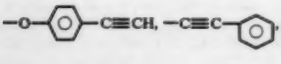
where Ar is aromatic and selected from the group consisting of



Ar' is



X is —C≡CH,



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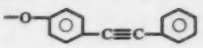


Y is 5–100% X and 0–95% H, and, n is 20–10,000.

4,375,537

POLYMER COMPOSITIONS COMPRISING ACETALS OF ADDUCTS OF ACROLEIN AND ISOCYANURIC ACID

Saul M. Cohen, Springfield, and John R. LeBlanc, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1980, Ser. No. 218,900

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

Int. Cl.³ C07D 251/34; C08G 4/00

U.S. Cl. 528—230 **13 Claims**

1. A composition comprising a polyfunctional acetal-reactive compound and an acetal of a monohydric primary or secondary alcohol and an acrolein-isocyanuric acid adduct.

4,375,538

POLYMER COMPOSITIONS COMPRISING ADDUCTS OF ACROLEIN AND ISOCYANURIC ACID

Saul M. Cohen, Springfield, and John R. LeBlanc, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1980, Ser. No. 219,125

The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.

Int. Cl.³ C07D 251/34; C08G 4/00

U.S. Cl. 528—230 **20 Claims**

1. A composition comprising an aldehyde and a polyfunctional aldehyde-reactive compound wherein the aldehyde is an adduct of one mole isocyanuric acid and at least one mole of acrolein.

4,375,539

SOLID BLOCKED CROSSLINKING AGENTS BASED ON 1,4-CYCLOHEXANE BIS(METHYLISOCYANATE)

Paul McBride, Aughton, and George C. Russell, Aintree, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

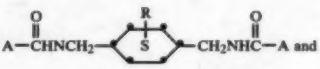
Filed Oct. 19, 1981, Ser. No. 313,017

Claims priority, application United Kingdom, Jul. 22, 1981, 8122657

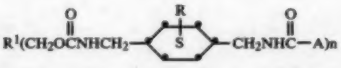
Int. Cl.³ C08G 63/44, 69/00, 69/44, 63/76

U.S. Cl. 528—288 **7 Claims**

1. A compound having the formula

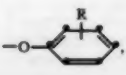


I



II

wherein A is selected from



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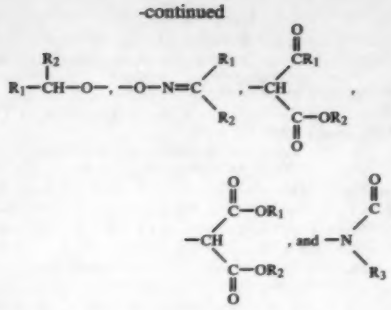


R is O to three of the same or different substituents selected from alkyl, $-NR_1R_2$, $-NO_2$, halogen, alkoxy, aryl, alkaryl and cycloalkyl; R_1 and R_2 are alkyl; wherein each of the aforesaid alkyl moieties or R, R_1 and R_2 contains from 1 to 10 carbons and is straight or branched; R_3 is alkylene of from 2 to 8 carbons; R^1 is selected from alkyl, aryl and cycloalkyl; and n is 2, 3 or 4.

6. The method of curing hydroxylated polymeric material comprising mixing therewith a compound of claim 1 in a concentration sufficient to react with a substantial number of hydroxyl groups of the polymer, and thereafter heating the mixture to cause said reaction.

7. The method of claim 6 wherein the polymeric material is polyester.

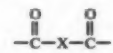
4,375,540

POLYESTER MODIFIED WITH ALKYL- OR ALKENYLSUCCINIC ANHYDRIDES

Frederick B. Joyner; Jimmy R. Trotter, and Richard L. McConnell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

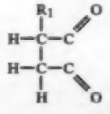
Filed Aug. 31, 1981, Ser. No. 297,817
Int. Cl.³ C08G 63/16
U.S. Cl. 528—302 **4 Claims**

1. A composition comprising a copolyester having a melting point of about 70° C. to about 200° C. and an inherent viscosity of about 0.4 to about 1.2, said copolyester containing the following divalent radicals:



(A)

(B) at least one of —O—Y—O— and —O—CH_2—CH_2—O—CH_2—CH_2—O—, and



(C)

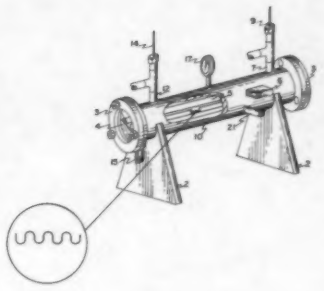
wherein X is comprised of at least 65 mole % of a divalent p-phenylene radical and 0 to 35 mole % of at least one divalent radical selected from m-phenylene, 2,6-naphthylene, 5-sodiosulfo-1,3-phenylene, and divalent cycloaliphatic radicals and primary aliphatic hydrocarbon radicals containing 2 to 34 carbon atoms, Y is a divalent aliphatic or cycloaliphatic radical containing 2 to 8 carbon atoms, and R_1 is selected from alkyl or 1-alkenyl radicals containing 3 to 30 carbon atoms, and wherein said copolyester is further characterized in that radical (A) is present in the amount of 98 to 60 mole percent, radical (B) is derived from at least 10 mole percent 1,6 hexanediol and radical (C) is in the amount of about 2 to about 40 mole percent.

4,375,541

METHOD FOR SEPARATING VINYL CHLORIDE FROM POLYMERS

Chung H. Wei, Wilmington, Del., and Leroy B. Kuhn, Eaton, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 894,772, Apr. 10, 1978, abandoned, which is a continuation of Ser. No. 705,240, Jul. 14, 1976, abandoned. This application Mar. 3, 1980, Ser. No. 126,624
Int. Cl.³ C08F 6/24, 6/16, 6/14
U.S. Cl. 528—500 **9 Claims**



1. A method of separating vinyl chloride monomer from an aqueous polyvinyl chloride resin mixture said mixture comprising water and polyvinyl chloride and having a polyvinyl chloride content of about 10 to about 50 weight percent; which method consists essentially of passing said aqueous resin mixture into a stripping zone under conditions of elevated temperature, subatmospheric pressure, and contact with a vibrating surface vibrating at a frequency in the range of less than about 6,000 cycles per minute; wherein said condition of elevated temperature is obtained by (1) heating said aqueous resin mixture before contact with said vibrating surface, or (2) introducing steam directly into the stripping zone into which said aqueous resin mixture is flowing over said vibrating surface; and recovering said aqueous resin mixture with a reduced vinyl chloride monomer content.

4,375,542

KIJANIMICIN ANTIBIOTICS AND DERIVATIVES THEREOF

Jay A. Waitz, Far Hills; Mahesh G. Patel, Verona, and Ann C. Horan, Metuchen, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 112,760, Jan. 17, 1980, abandoned. This application Oct. 8, 1980, Ser. No. 195,048
Int. Cl.³ C07H 17/08; C12P 19/62
U.S. Cl. 536—7.1 **7 Claims**

1. Kijanimicin, having the following physicochemical characteristics:

(a) A melting point with decomposition of 174.5° C.;

(b) A specific optical rotation as measured at the D line of sodium of 25° C. of $-116.4° \pm$ at 0.3% in methanol;

(c) Ultra-violet absorption maxima in 2,2,2-trifluoroethanol at 99 nm ($E_{1\ cm}^{1\%}$ 328.4), 242 nm ($E_{1\ cm}^{1\%}$ 56.2), 264 nm ($E_{1\ cm}^{1\%}$ 63.1) and 274 nm ($E_{1\ cm}^{1\%}$ 60.7);

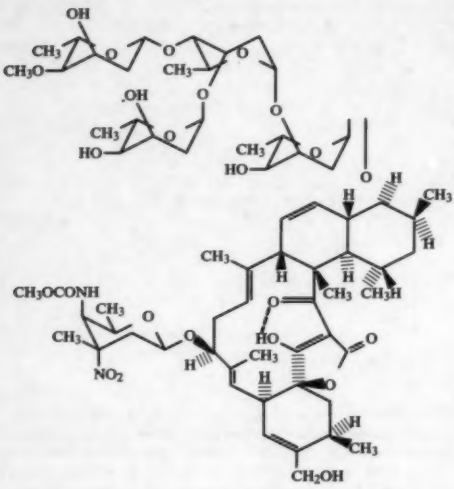
(d) Infrared Spectrum, lambda max ($CHCl_3$) 3690, 3620, 3540, 3480, 3440, 2970, 2940, 1755, 1733, 1623, 1545, 1515, 1318, 1232, 1130, 1060 cm^{-1};

(e) ^{13}C-NMR Nuclear Magnetic Resonance δC ($CDCl_3$) 206.2, 201.5, 167.1, 157.4, 141.5, 137.1, 135.7, 126.7, 125.8, 123.6, 121.5, 119.3, 101.9, 99.8, 98.2, 97.1, 92.2, 91.0, 90.8,

84.5, 83.3, 82.6, 79.6, 78.4, 72.4, 71.8, 69.1, 68.1, 67.5, 67.1, 66.8, 65.1, 64.9, 64.4, 63.8, 62.6, 57.3, 53.8, 53.2, 52.7, 51.0, 43.1, 41.6, 40.2, 38.5, 36.8, 35.7, 35.5, 34.8, 34.4, 31.3, 31.1, 29.9, 29.7, 27.9, 25.3, 22.2, 18.4, 17.9,

(f) ^1H Nuclear Magnetic Resonance δH ($CDCl_3$)0.65 (2H,m), 1.06 (3H,d,J=7 H_2), 1.18 (3H,d,J-6H_2), 1.20–1.40 (envelop of signals), 1.60 (3H,S), 1.64 (3H,S), 3.45 (3H,S), 3.76 ppm (3H,S);

(g) and having a planar structural formula substantially as follows:



and the non-toxic pharmaceutically acceptable cationic salts thereof.

4,375,543

N-[3-(1'-3''-OXAPENTAMETHYLENE-AMINO-ETHYLIDENEAMINO)-2,4,6-TRIIODOBENZOYL]-β-AMINO-α- METHYLPROPIONITRILE IN PROCESS TO MAKE CORRESPONDING ACID

Josef Wieser, and Josef Krieger, both of Linz, Austria, assignors to Chemie Linz Aktiengesellschaft, Austria

Division of Ser. No. 218,741, Dec. 22, 1980, Pat. No. 4,308,383. This application Jul. 29, 1981, Ser. No. 288,200

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1980, 3000209

Int. Cl.³ C07D *295/14*

U.S. Cl. 544—165 **3 Claims**

1. A process for production of N-[3-(1'-3''-oxapentamethyleneamino-ethylideneamino)-2,4,6-triiodobenzoyl]-β-amino-α-methylpropionic acid comprising using N-[3-(1'-3''-Oxapentamethyleneamino-ethylideneamino)-2,4,6-triiodobenzoyl]-β-amino-α-methylpropionitrile as starting material and hydrolyzing said nitrile compound by heating with a strong acid or an alkaline hydrolyzing agent in aqueous medium.

4,375,544

FUSED PYRIDINES

Otto Meth-Cohn, and Brahma Narine, both of Salford, England, assignors to Croda Synthetic Chemicals Limited, Four Ashes, Nr. Wolverhampton, England

PCT No. PCT/GB79/00017, § 371 Date Jun. 8, 1979, § 102(e) Date Jun. 8, 1979, PCT Pub. No. WO79/00540, PCT Pub. Date Aug. 9, 1979

PCT Filed Jan. 24, 1979, Ser. No. 217,325

Int. Cl.³ C07D *215/18, 495/04*

U.S. Cl. 546—114 **14 Claims**

1. In the synthesis of an aromatic-α-halo[b]fused pyridine by reacting an N-substituted acetamide with an N-substituted formamide and an inorganic acid halide in a solvent, wherein the substituent on the N atom of the acetamide is an aromatic ring in which the ring carbon atom adjacent to the ring carbon atom substituted by the N atom is unsubstituted or is substituted by a labile substituent and wherein the carbon atom adjacent the CO group of the acetamide group carries at least two hydrogen atoms, the improvement consisting of reacting the acid halide in an amount of at least 2 moles per mole acetamide group and at least 1.5 moles per mole N-substituted formamide.

4,375,545

PROCESS FOR THE SYNTHESIS OF THE NICOTINYL ESTER OF 6-AMINONICOTINIC ACID

Paul L. Warner, Jr., Clarence; Edward J. Luber, Jr.; William A. Somerville, both of Buffalo, and F. Christopher Zusi, Williamsville, all of N.Y., assignors to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.

Filed Jun. 22, 1981, Ser. No. 275,577

Int. Cl.³ C07D *213/79*

U.S. Cl. 546—263 **4 Claims**

1. A process for producing 6-aminonicotinic acid nicotinyl ester comprising the steps of

(a) reacting 6-aminonicotinic acid with an equimolar amount of sodium carbonate, in dimethylformamide and at an elevated temperature, to produce the corresponding sodium salt of 6-aminonicotinic acid;

(b) then, reacting said salt with 3-chloromethylpyridine hydrochloride in dimethylformamide and at an elevated temperature, to produce said nicotinyl ester.

4,375,546

SUBSTITUTED PYRIDINYL ESTERS OF 2-(1-OXOALKYLOXY)ETHYL CARBAMIC ACID

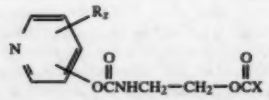
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 16, 1981, Ser. No. 321,354

Int. Cl.³ C07D *213/64*

U.S. Cl. 546—292 **4 Claims**

1. A compound corresponding to the formula:



wherein R is hydrogen or halo; X is alkyl of one to four carbon atoms; and z is an integer of from 1 to 4, both inclusive.

4,375,547

N-METHYL-N'-2-([2-DIMETHYLAMINOMETHYL)-4-THIAZOLYL]METHYLTHIO)ETHYL 2-NITRO-1,1-ETHENEDIAMINE

Richard P. Pioch, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 2, 1980, Ser. No. 193,192
Int. Cl.³ C07D 277/20; A61K 31/425
U.S. Cl. 548—205 1 Claim

1. A compound said compound being N-methyl-N'-([2-(dimethylaminomethyl)-4-thiazolyl]methylthio)ethyl 2-nitro-1,1-ethenediamine.

4,375,548

PREPARATION OF TRICHLOROMETHYL CARBINOLS

Pen-Chung Wang, and James M. Renga, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 17, 1981, Ser. No. 331,854
Int. Cl.³ C07F 7/18, 7/04
U.S. Cl. 556—470 9 Claims

1. A process for preparing siloxy and trichloromethyl functionalized compounds comprising contacting an aldehyde or ketone with a silylated trichloroacetate at elevated temperatures in the presence of an initiator.

4,375,549

PROCESS FOR MAKING SILYL ETHERS

James M. Renga, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 278,786, Jun. 29, 1981, abandoned. This application Mar. 8, 1982, Ser. No. 355,636
Int. Cl.³ C07F 7/04, 7/18
U.S. Cl. 556—470 8 Claims

1. A process for making an organic silyl ether of the empirical formula $(R''_{4-n}Si)_mO_{m-n}R_n$ which comprises contacting a carbonate of the formula $R(OCO_2R')_m$ with an organic silyl halide of the formula $R''_{4-n}SiX_n$ in the presence of a catalytic amount of an initiator compound at about 50° C.–250° C. and separating said silyl ether from the resulting reaction mixture, wherein R is an aliphatic, cycloaliphatic, heterocyclic, or aromatic group having a valence of m, R' is a lower alkyl or halogenated lower alkyl group, R'' is hydrogen or an aliphatic, cycloaliphatic, aromatic, or heterocyclic monovalent group, m and n each represent an integer from one to three, and X is Cl, Br, or I.

4,375,550

HYDROGENATION OF HALOGEN-SUBSTITUTED AROMATIC NITRO COMPOUNDS

Alfred J. Bird, Hounslow, and Gordon G. Ferrier, Henley on Thames, both of England, assignors to Johnson, Matthey & Co., Limited, London, England

Division of Ser. No. 122,820, Feb. 19, 1980, abandoned. This application Aug. 27, 1981, Ser. No. 296,880
Claims priority, application United Kingdom, Feb. 22, 1979, 7906269
Int. Cl.³ C07C 101/54, 85/11
U.S. Cl. 560—47 13 Claims

1. A process for the hydrogenation of a halogen-substituted aromatic nitro compound substantially without simultaneous dehalogenation comprising contacting a halogen-substituted aromatic nitro compound with hydrogen at elevated temperature and pressure in the presence of a catalyst consisting essentially of from 0.1 to 10 wt % of one or more metals from the group consisting of platinum, palladium, rhodium, iridium, ruthenium and osmium supported on or impregnated into a carrier material comprising carbon activated during manufacture with phosphoric acid or a salt thereof.

4,375,551

PROCESS FOR MAKING ALLYLIC ESTERS OF TETRABROMOPHTHALIC ACID

Joseph H. Finley, Metuchen, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Sep. 18, 1981, Ser. No. 303,644
Int. Cl.³ C07C 67/00, 67/08
U.S. Cl. 560—83 18 Claims

1. The method of producing a diallylic ester of tetrabromophthalic acid comprising the steps of:

(a) forming a salt of the monoallylic ester of tetrabromophthalic acid by reacting tetrabromophthalic anhydride with

(i) a sufficient excess of allylic alcohol, over the amount to form the said monoallylic ester, to comprise at least part of a solvent to maintain in solution or suspension the said salt formed in (a), and

(ii) a sufficient amount of a base to form said salt,

(b) adding to the product of step (a) a sufficient amount of an allylic halide to convert the salt of the monoallylic ester to the diester of tetrabromophthalic acid and heating to accelerate the reaction,

(c) cooling the solution produced in step (b) to crystallize the said allylic diester of tetrabromophthalic acid from solution, and

(d) separating the thus-created allylic diester of tetrabromophthalic acid from the remaining solvent.

4,375,552

NITRIC ACID PROCESS FOR PRODUCTION OF ADIPIC ACID FROM HYDROCARBONS

Vincent P. Kuceski, Chicago Heights, Ill., assignor to C. P. Hall Company

Continuation-in-part of Ser. No. 795,419, Jan. 31, 1969, abandoned. This application Jun. 15, 1970, Ser. No. 46,030
Int. Cl.³ C07C 67/08
U.S. Cl. 560—204 9 Claims

1. In a continuous process for the treatment of the mother liquor which results from the nitric acid oxidation of cyclohexanol and/or cyclohexanone and the recovery of the valuable components therefrom, which mother liquor contains a mixture of aliphatic dibasic acids, nitric acid and metal catalysts values, the improved process comprising:

(a) continuously contacting said mother liquor with an organic alcohol of the formula ROH wherein R is alkyl of 4 to about 20 carbon atoms and which alcohol will form esters which are not miscible with the resulting aqueous phase, and in a sufficient amount to esterify at least a portion of the dibasic acids;

(b) allowing the organic esters to form a separate organic phase from an aqueous phase;

(c) separating said organic phase and said aqueous phase; and

(d) recycling said aqueous phase containing nitric acid and metallic catalyst components to the nitric acid oxidation reaction.

4,375,553

PROCESS FOR PRODUCING BENZENE CARBOXYLIC ACID SALTS FROM AROMATIC MATERIALS

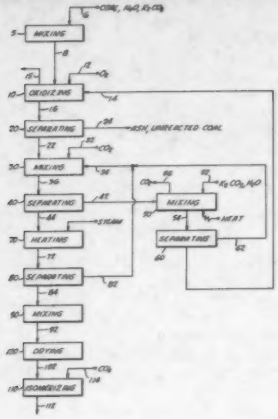
James R. Graham, Fountain Valley, Calif., and John G. Huntington, Broomfield, Colo., assignors to Occidental Research Corporation, Irvine, Calif.

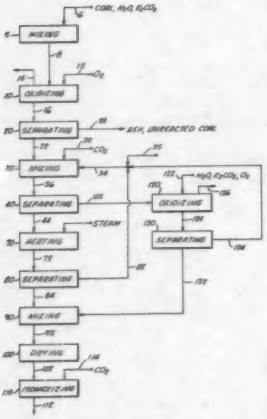
Filed Sep. 28, 1981, Ser. No. 306,580
Int. Cl.³ C07C 51/16, 51/42
U.S. Cl. 562—408 26 Claims

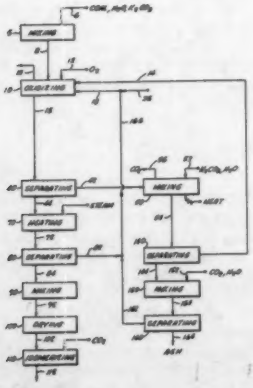
1. A process for producing an aqueous solution which comprises soluble benzene carboxylic acid salts which is substantially free of soluble humic acid salts comprising:

a. reacting a first aqueous solution which comprises soluble humic acid salts and soluble benzene carboxylic acid salts, with carbon dioxide and an inorganic chemical selected

from the group consisting of magnesium bicarbonate, magnesium carbonate, a double salt of magnesium carbon-







ate, and mixtures thereof under conditions operable for converting said soluble humic acid salts to precipitated magnesium humic acid salts while maintaining said soluble benzene carboxylic acid salts in solution; and

b. separating said reacted first aqueous solution into

i. a second aqueous solution which comprises said soluble benzene carboxylic acid salts and which is at least substantially free of said soluble humic acid salts, and

ii. a mixture which comprises said precipitated magnesium humic acid salts.

4,375,554

PROCESS FOR PREPARING AMIDINECARBOXYLIC ACIDS

Kiyoshi Fukui, and Kiyomi Okimoto, both of Ichihara, Japan, assignors to UBE Industries Ltd., Ube, Japan

Filed Nov. 5, 1981, Ser. No. 318,598

Claims priority, application Japan, Nov. 18, 1980, 55/161386

Int. Cl.³ C07C *119/00*

U.S. Cl. 562—440 **8 Claims**

1. A process for preparing an amidinecarboxylic acid which comprises reacting, in water, an alkoxyiminoacetic acid ester represented by the formula

$$HN{=}C(OR^1){-}COOR^2$$

(wherein R^1 and R^2 individually represent an alkyl group of 1 to 4 carbon atoms) with an amine represented by the formula

$$R^3{-}NH_2$$

(wherein R^3 represents a hydrogen atom, an alkyl group of 1 to 4 carbon atoms, an alkenyl group of 2 to 4 carbon atoms, a cycloalkyl group of 5 to 7 carbon atoms or a benzyl group).

4,375,555

SYNTHESIS OF ALPHA-AMINO ACIDS

Jefferson W. Davis, Jr., San Francisco, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 77,811, Sep. 21, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,102

Int. Cl.³ C07C *99/10*

U.S. Cl. 562—444 **5 Claims**

1. An improved process for synthesizing an alpha-amino acid comprising:

reacting a metal cyanide with an aldehyde or a ketone in the absence of water to form a corresponding cyanohydrin of the formula:

$$R_1R_2C(OH)CN$$

wherein R_1 and R_2 represent hydrogen, alkyl radicals of 1 to 10 carbon atoms, alkenyl radicals of 2 to 4 carbon atoms, aryl radicals of 6 to 12 carbon atoms, alkaryl radicals of 7–8 carbon atoms, aralkyl radicals of 7–8 carbon atoms, and p-hydroxyphenyl radicals,

reacting said cyanohydrin with thionyl chloride to form a chlorosulfinyl nitrile of the formula:

$$R_1R_2C(OSOCl)CN,$$

reacting said chlorosulfinyl nitrile with ammonia to form an amino nitrile of the formula:

$$R_1R_2C(NH_2)CH;$$

and,

hydrolyzing said amino nitrile to the alpha-amino acid.

4,375,556

PROCESS FOR THE PREPARATION OF NAPHTHALENE-1,4-DICARBOXYLIC ACID

Hans Frischkorn, and Erich Schinzel, both of Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,829

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024527

Int. Cl.³ C07C 51/08

U.S. Cl. 562—484 3 Claims

1. A process for the preparation of naphthalene-1,4-dicarboxylic acid, which comprises reacting a 1,4-dihalogenonaphthalene with at least 2 moles of copper-I cyanide per mole of dihalogenonaphthalene in a polar, aprotic solvent at a temperature of from 150° to 250° C. and subjecting the copper salt complex of 1,4-dicyanonaphthalene thus obtained to alkaline hydrolysis.

4,375,557

PROCESS FOR THE PREPARATION OF DIHALOVINYLCYCLOPROPANE CARBOXYLIC ACID

Petrus A. Kramer, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

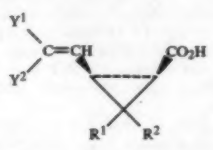
Division of Ser. No. 306,106, Sep. 28, 1981, Pat. No. 4,346,038. This application Jun. 7, 1982, Ser. No. 385,991

Claims priority, application United Kingdom, Oct. 22, 1980, 8034067

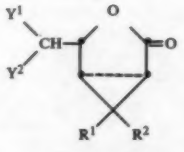
Int. Cl.³ C07C 51/09

U.S. Cl. 562—500 4 Claims

1. A process for the preparation of a (cis)-dihalovinylcyclopropanecarboxylic acid of the formula:



wherein each of Y^1 and Y^2 independently represents a fluorine, chlorine or bromine atom and each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having up to 10 carbon atoms, or R^1 and R^2 together represent an alkylene group having from 2 to 5 carbon atoms which comprises treating a compound of the formula



wherein Y^1, Y^2, R^1 and R^2 have the above stated meanings, with a base.

4,375,558

PURIFICATION OF METHACRYLAMIDOPROPYLTRIMETHYL-AMMONIUM CHLORIDE WITH NONIONIC ORGANIC RESINS

Edward E. McEntire, and Edward C. Y. Nieh, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 9, 1981, Ser. No. 309,962

Int. Cl.³ C07C 103/44

U.S. Cl. 564—206 7 Claims

1. A process for purifying aqueous solutions of monomers containing quafernary ammonium salts or the free amine thereof without removing the same proportion of a polymerization inhibitor, which comprises contacting an aqueous solution containing from 1 to 99 percent by weight of the monomer in contact with a solid, nonionic organic resin.

4,375,559

PROCESS FOR THE PRODUCTION OF HYDRAZOAROMATICS USING A MULTI-PHASE SYSTEM

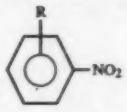
Charles G. Coe, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 15, 1982, Ser. No. 398,726

Int. Cl.³ C07C 109/04

U.S. Cl. 564—312 17 Claims

1. In a process for catalytically hydrogenating a compound of the formula:



where R is a lower alkyl having one to six carbons, to its hydrazo derivative product in the presence of a hydrogen atmosphere, a metal hydrogenation catalyst, and an alkaline base in aqueous solution, the improvement for enhancing the selectivity and yield of the hydrazo derivative product which comprises utilizing a solvent mixture which is inert to hydrogenation in which one solvent component is capable of solubilizing the compound and at least a portion of the alkaline base and another solvent component which is effective for maintaining the dielectric constant of the solvent mixture below 25 and capable of solubilizing the hydrazo derivative product.

4,375,560

PROCESS FOR THE PREPARATION OF 3,5-DIMETHYLANILINE (SYM. M-XYLIDINE)

Werner H. Müller, Eppstein, and Rüdiger Berthold, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 4, 1981, Ser. No. 318,115

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041848

Int. Cl.³ C07C 85/11

U.S. Cl. 564—415 3 Claims

1. A process for the preparation of 3,5-dimethylaniline which comprises passing 3,5-dimethyl-cyclohexenone oxime in the gaseous phase at temperatures of from 200° to 500° C. over a catalyst containing at least one noble metal of the 8th subgroup of the Periodic Table.

4,375,561

PROCESS FOR THE PREPARATION OF AROMATIC AMINES

Rüdiger Berthold, Bad Soden am Taunus, and Werner H. Müller, Eppstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 4, 1981, Ser. No. 318,117

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041836

Int. Cl.³ C07C 85/11

U.S. Cl. 564—415 8 Claims

1. A process for the preparation of aromatic amines from the corresponding cycloaliphatic oximes, which comprises heating the oxime to a temperature of from 150° to 350° C. in an ether group containing solvent in the presence of a catalyst contain-

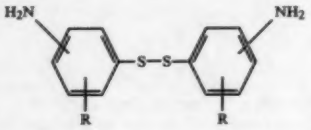
ing a noble metal of the 8th auxiliary group of the Periodic Table of Elements.

4,375,562
PROCESS FOR THE PREPARATION OF BIS-(AMINO-PHENYL)-DISULPHIDES

Heinz U. Blank, Odenthal; Theodor Pfister, Wuppertal, and Rolf Pütter, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,348
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009846
Int. Cl.³ C07C 93/14
U.S. Cl. 564—430 10 Claims

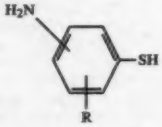
1. Process for the preparation of a bis-(amino-phenyl)-disulphide of the formula



in which

R represents hydrogen or halogen,

which consists essentially of contacting an amino-thiophenol of the formula



or a salt thereof in which

R has the above-mentioned meaning with sulphur or thiosulphate which donates sulphur in an aqueous dispersion at a temperature of 10° to 120° C. and a pH value of 3 to 9 employing a reaction mixture consisting essentially of said amino thiophenol or salt thereof, water and elemental sulphur or said thiosulphate.

4,375,563
FLUORINATED AROMATIC POLYENES

Ka-Kong Chan, Hopatcong, and Beverly A. Pawson, Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 277,569, Jun. 25, 1981, Pat. No. 4,338,253, which is a division of Ser. No. 206,197, Nov. 12, 1980, Pat. No. 4,321,209, which is a division of Ser. No. 96,362, Nov. 21, 1979, Pat. No. 4,266,073, which is a division of Ser. No. 37,798, May 10, 1979, Pat. No. 4,201,727, which is a division of Ser. No. 952,416, Oct. 18, 1978, Pat. No. 4,169,100, which is a division of Ser. No. 809,738, Jun. 24, 1977, Pat. No. 4,137,246, which is a continuation-in-part of Ser. No. 722,939, Sep. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,028, Nov. 14, 1975, abandoned. This application Mar. 30, 1982, Ser. No. 363,706
Int. Cl.³ C07C 49/248, 47/263, 43/23
U.S. Cl. 568—308 7 Claims

2. 4-(4-methoxy-2,3,6-trimethylphenyl)-1,1,1-trifluoro-3(E)-buten-2-one.

4,375,564
ALKOXYLATION PROCESS

Charles L. Edwards, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1981, Ser. No. 334,091
Int. Cl.³ C07C 41/03
U.S. Cl. 568—618 21 Claims

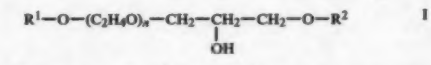
1. A process for the preparation of alkanol alkoxylates which comprises reacting in an alkoxylation reaction mixture an alkanol reactant comprising one or more alkanols having carbon numbers in the range from about 6 to 30, inclusive, with an alkylene oxide reactant comprising one or more alkylene oxides having carbon numbers in the range from 2 to 4, inclusive, in the presence of a catalytically-effective amount of a co-catalyst combination comprising as a first component one or more soluble basic compounds of magnesium and as a second component one or more soluble compounds of at least one element selected from the group consisting of aluminum, boron, zinc, titanium, silicon, molybdenum, vanadium, gallium, germanium, yttrium, zirconium, niobium, cadmium, indium, tin, antimony, tungsten, hafnium, tantalum, thallium, lead, and bismuth, said co-catalyst combination comprising at least about 5 percent by mol of said second component, calculated on mols of said first component.

4,375,565
LOW-FOAMING, BIODEGRADABLE ALKOXYLATION PRODUCTS TERMINATED WITH GLYCERINE ETHER RADICALS, AND A PROCESS FOR THEIR PREPARATION

Norbert Greif, Bobenheim; Erhard Klahr, and Wolfgang Trieselt, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 15, 1981, Ser. No. 311,669
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042823
Int. Cl.³ C07C 43/03, 43/10
U.S. Cl. 568—622 2 Claims

1. A composition of matter having the following structural formula:



I

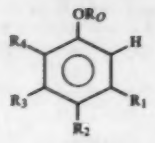
wherein R^1 is an alkyl group having 8 to 20 carbon atoms, R^2 is an alkyl group having 1 to 5 carbon atoms, and n is an integer from 4 to 15.

4,375,566
PROCESS FOR PRODUCING ORTHO-ALKYLATED PHENOLS FROM ANISOLES

Motoo Kawamata; Kazushi Ohshima; Mitsuo Onofusa; Akihide Kudoh; Makoto Kotani, all of Yokohama, and Takeshi Tsuda, Samukawamachi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,391
Claims priority, application Japan, Nov. 14, 1978, 53/139311
Int. Cl.³ C07C 37/055, 39/06
U.S. Cl. 568—716 12 Claims

1. A process for producing o-alkylated phenols comprising contacting an anisole represented by the formula



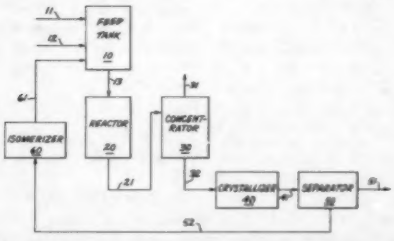
wherein R_0 represents alkyl radicals of 1 to 4 carbon atoms, R_1 R_2, R_3, and R_4 represent hydrogen atoms, alkyl radicals of 1 to 4 carbon atoms, and may be identical to or different from each other, with a mixed oxide catalyst in the vapor phase at a reaction temperature in the range of from 260° C. to 480° C. to selectively form an o-alkylated phenol, wherein said mixed oxide catalyst is a chromium oxide containing catalyst, a manganese oxide containing catalyst, an iron oxide containing catalyst, or a magnesium oxide containing catalyst; wherein said chromium oxide containing catalyst contains chromium oxide as the major component, and at least one member selected from the group consisting of tin oxide, iron oxide, manganese oxide, aluminium oxide, silicon oxide, boron oxide, alkali metal oxides, alkaline earth metal oxides and the sulfate group; wherein said manganese oxide containing catalyst contains manganese oxide as the major component, and at least one member selected from the group consisting of silicon oxide, alkali metal oxides, alkaline earth metal oxides, and the sulfates group; wherein said iron oxide containing catalyst contains iron oxide as the major component, and at least one member selected from the group consisting of silicon oxide, chromium oxide, zinc oxide, manganese oxide, vanadium oxide, alkali metal oxides, and alkaline earth metal oxides; and wherein said magnesium oxide containing catalyst contains magnesium oxide as the major component, and at least one member selected from the group consisting of tin oxide, copper oxide, lanthanide oxide, actinide oxide, bismuth oxide and boron oxide.

4,375,567

METHOD FOR MAKING BISPHENOL

Gary R. Faler, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 21, 1981, Ser. No. 294,659
Int. Cl.³ C07C *39/16*
U.S. Cl. 568—727 **2 Claims**



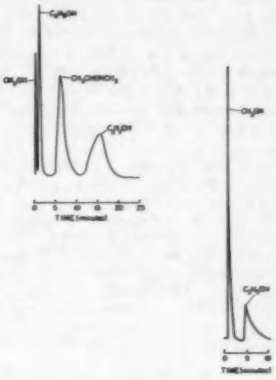
1. In a continuous process for making bisphenol by condensing phenol and acetone in the presence of an ion-exchange catalyst resulting in the production of effluent comprising 2,2-bis(4-hydroxyphenyl)propane and a contaminating amount of 2,4'-dihydroxy-2,2-diphenyl propane, whereby said effluent is transported to a bisphenol-A concentrator, a crystallizer and a solid/liquid separator to effect the separation of bisphenol-A from its reaction by-product and starting reactants which are recycled to an isomerization zone containing an ion-exchange catalyst to effect the conversion of said 2,4'-dihydroxy-2,2-diphenyl propane to 4,4'-bis(4-hydroxyphenyl)propane which is recyled to a bisphenol feed tank, the improvement which comprises, utilizing as the ion-exchange resin in the isomerization zone a macroreticular cationic-exchange catalyst whereby improved conversion of 2,4'-dihydroxy-2,2-diphenyl propane to 2,2-bis-(4-hydroxyphenyl)propane is achieved.

4,375,568

CHROMATOGRAPHIC SEPARATIONS USING A UNIQUE SILICA POLYMORPH

Thomas P. J. Izod, Holliston, Mass., and Jack A. Duisman, El Cerrito, Calif., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 4, 1981, Ser. No. 231,406
Int. Cl.³ C07C *37/82, 29/76*
U.S. Cl. 568—758 **8 Claims**



1. A process for the chromatograpic separation of mixtures of compounds having a hydroxyl functional group, said mixtures containing,

(a) two or more members of the group consisting of ethylene glycol, methanol, ethanol, 2-propanol, 1-propanol and water or

(b) phenol and water, which comprises passing said mixtures over a fixed bed of F-silicalite.

4,375,569

PROCESS FOR THE OXYCHLORINATION OF AN ALKANE USING A SOLID SOLUTION CATALYST CONTAINING IRON CATIONS

William J. Kroenke, Brecksville, and Paul P. Nicholas, Broadview Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 741,910, Nov. 15, 1976, which is a continuation-in-part of Ser. No. 564,794, Apr. 3, 1975, abandoned. This application Oct. 10, 1978, Ser. No. 950,119
Int. Cl.³ C07C *17/154*
U.S. Cl. 570—224 **3 Claims**

1. In the process of oxychlorination of ethane to prepare ethylene, vinyl chloride, and other chlorinated hydrocarbons, the improvement comprising the use of, as a catalyst, a solid solution catalyst consisting of iron cations in a host lattice of α-Al_2O_3 or β-Al_2O_3, said catalyst having an iron content from about 1 percent to about 15 percent by weight, expressed as the oxide, prepared by employing a calcinating step at temperatures above about 1100° C., and having an X-ray diffraction pattern having peak positions in the pattern different than that of its host lattice.

4,375,570

METHOD OF TREATING ALPHA-METHYLBENZYL ALCOHOL DEHYDRATION RESIDUES

Amos Yudovich, Tulsa, Okla., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 5, 1982, Ser. No. 375,238
Int. Cl.³ C07C 12/64, 1/253
U.S. Cl. 585—410 7 Claims

1. A process for the recovery of aromatic hydrocarbons from dehydration residues obtained in the preparation of styrene from alpha-methylbenzyl alcohol which comprises thermally cracking the residues at a temperature within the range from about 325° C.–475° C. and a pressure within the range from about 75 to 300 psig, withdrawing the cracked effluent and recovering liquid aromatic hydrocarbons.

4,375,571

PROCESS FOR THE PREPARATION OF ETHYLBENZENE FROM 4-VINYLCYCLOHEXENE-1

Donald W. Hart, and Lynn H. Slaugh, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 280,636, Jul. 6, 1981, abandoned. This application Aug. 24, 1981, Ser. No. 295,919
Int. Cl.³ C07C 5/03
U.S. Cl. 585—431 11 Claims

1. A process for dehydrogenating 4-vinylcyclohexene to ethylbenzene which comprises contacting the 4-vinylcyclohexene at a temperature of about 100° C. to about 450° C. with a catalyst prepared by impregnating a porous alumina support with an oxide or a compound decomposable to an oxide upon calcination of a metal selected from the group consisting of sodium, potassium, rubidium, cesium, calcium, strontium, barium or mixtures thereof and subsequently calcining the impregnated alumina at a temperature ranging from about 450° C. to about 750° C.

4,375,572

PROCESS FOR THE CONVERSION OF TERPENES

Lawson G. Wideman, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 5, 1982, Ser. No. 365,695
Int. Cl.³ C07C 5/09
U.S. Cl. 585—435 31 Claims

1. A process for the conversion of terpenes to α-methylmethylstyrenes which comprises contacting at least one terpene selected from the group comprised of mono- and bi-cyclic unsaturated hydrocarbons having the formula $C_{10}H_{16}$, with an alkali metal hydroxide catalyst on a support at a temperature of 300° to 500° C.

4,375,573

SELECTIVE PRODUCTION AND REACTION OF P-DISUBSTITUTED AROMATICS OVER ZEOLITE ZSM-48

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 277,516, Jun. 26, 1981, abandoned, which is a continuation of Ser. No. 63,230, Aug. 3, 1979, abandoned. This application Jan. 27, 1982, Ser. No. 343,131
Int. Cl.³ C07C 2/68, 5/22
U.S. Cl. 585—467 27 Claims

1. A process for effecting disproportionation of toluene to produce benzene and xylenes in which the proportion of paraxylene isomer is in excess of its normal equilibrium concentration which comprises contacting toluene under conditions including a temperature of between about 350° C. and 750° C., a pressure of between about 1 atmosphere and 100 atmospheres, and a weight hourly space velocity of between about 0.25 and 20 with a catalyst comprising zeolite ZSM-48.

9. A process for effecting the alkylation of mono-substituted aromatic compounds to produce a di-substituted aromatic product in which the para-isomer is in excess of normal equilibrium concentration which comprises contacting a mono-substituted aromatic compound with an alkylating agent under conditions effective for accomplishing said alkylation in the presence of a catalyst comprising zeolite ZSM-48.

4,375,574

PROCESS FOR TRANSALKYLATING BENZENE AND DIALKYLBENZENE

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 219,279, Dec. 22, 1980, Pat. No. 4,335,022, which is a continuation-in-part of Ser. No. 61,205, Jul. 27, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,014
Int. Cl.³ C07C 5/22
U.S. Cl. 585—474 11 Claims

1. A process for transalkylation of benzene and dialkylbenzene to alkylbenzene which comprises contacting the benzene and the dialkylbenzene at about 175° to about 450° C. with a catalyst prepared by a process which comprises impregnating a substantially dehydrated amorphorous silica gel with aluminum hydride dissolved in an anhydrous, non-hydroxyl containing organic solvent, drying the impregnated silica to remove the solvent and subsequently heating the impregnated silica at a temperature of about 300° to about 900° C. in a non-oxidizing atmosphere.

4,375,575

DIALKYLBENZENE ISOMERIZATION PROCESS

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 219,279, Dec. 22, 1980, Pat. No. 4,335,022, which is a continuation-in-part of Ser. No. 61,205, Jul. 27, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,009
Int. Cl.³ C07C 63/14
U.S. Cl. 585—480 11 Claims

1. A process for isomerizing dialkylbenzenes which comprises contacting at about 350° to about 600° C. the dialkylbenzene with a catalyst prepared by a process which comprises impregnating a substantially dehydrated amorphorous silica gel with aluminum hydride dissolved in an anhydrous, non-hydroxyl containing organic solvent, drying the impregnated silica to remove the solvent and subsequently heating the impregnated silica at a temperature of about 300° to about 900° C. in a non-oxidizing atmosphere.

4,375,576

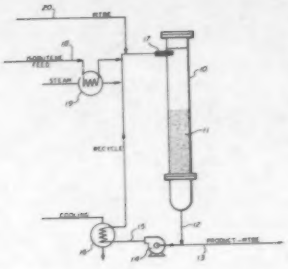
ENHANCED DIISOBUTENE PRODUCTION IN THE PRESENCE OF METHYL TERTIARY BUTYL ETHER

Lawrence A. Smith, Jr., Bellaire, Tex., assignor to Chemical Research & Licensing Co., Houston, Tex.

Filed Jul. 27, 1981, Ser. No. 287,193
Int. Cl.³ C07C 2/04
U.S. Cl. 585—510 13 Claims

1. In a liquid process for separating isobutene from a stream containing isobutene, and other hydrocarbons, comprising contacting said stream in liquid phase at a temperature in the range of 35° to 160° C. with a fixed bed cation exchange resin for a sufficient time to react at least a portion of the isobutene present therein with itself to form dimers and recovering a product stream containing said dimers and having a lower isobutene content than said feed stream whereby the formation

of higher olegomers and codimers of isobutene with other olefins is suppressed, wherein the improvement comprises



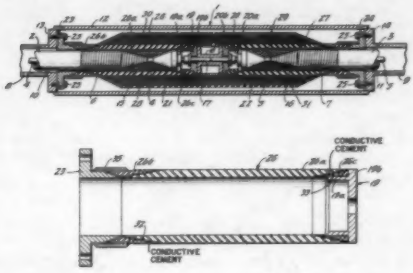
having said stream consists of isobutene, other hydrocarbons and a small amount of MTBE.

4,375,577

STOP JOINT ASSEMBLY FOR PRESSURIZED LAMINAR DIELECTRIC CABLE

David A. Silver, Livingston; Attila F. Dima, and George W. Seman, both of Piscataway, all of N.J., assignors to Pirelli Cable Corporation, Union, N.J.

Filed Jan. 5, 1981, Ser. No. 222,639
Int. Cl.[3] H02G 15/25
U.S. Cl. 174—22 R 19 Claims



1. An electric cable joint comprising a cable having a core including a conductor surrounded by insulation, and having fluid impermeable means around said insulation but spaced at one end from the end of the conductor so as to expose said insulation, and fluid under pressure within said fluid impermeable means, said joint further comprising:

first connecting means conductively connected to the end of said conductor for connecting said conductor to the conductor of another cable;

a fluid impermeable tube of insulating material intermediate said first connecting means and said end of said fluid impermeable means and around the exposed insulation, said tube having a peripherally extending surface at the end thereof nearer said first connecting means which extends at an acute angle to the axis of said tube;

an electrode intermediate said first connecting means and said end of said tube and having a fluid tight connection with both said first connecting means and said end of said tube, said electrode being made of a material having a coefficient of expansion substantially the same as the coefficient of expansion of the material of said tube and having a surface adjacent said end of said tube which has a shape corresponding to the shape of said surface at said end of said tube and said electrode comprising insulating material but having conductive material at least at said surface thereof which is conductively connected to said first connecting means for modifying the electric field at said conductor end and which engages said surface at said end of said tube; and

second connecting means providing a fluid-tight connection between the other end of said tube and said fluid impermeable means around the insulation of said cable.

4,375,578

SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME

Gordon C. Mitchell, Pomona, and Barney Horwitz, Placentia, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

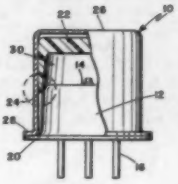
Filed Feb. 6, 1981, Ser. No. 232,344
Int. Cl.[3] H05K 5/06
U.S. Cl. 174—52 H 7 Claims

1. A semiconductor device comprising:

a substantially cup-shaped header means of electrical insulating material having semiconductor means atop thereof and having flange means at the bottom thereof;

a substantially cup-shaped case means for positioning over said header means with a space between the side wall of said case means and said header means and having flange means at the bottom thereof for connection to the flange means on said header means; and

a substantially thimble-shaped liner means of flexible, electrical insulating material for positioning between said header means and said case means, said liner means including a side wall that tapers toward the bottom and forming lip



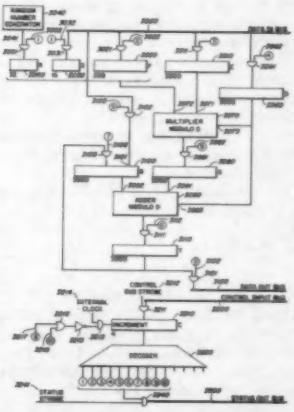
means for positioning between the side wall of said liner means and the side wall of said case means in pressure engagement with said side walls, said liner means comprising means for providing a tight seal and preventing small particles which work loose from said case means from engaging the semiconductor means atop said header means.

4,375,579

DATABASE ENCRYPTION AND DECRYPTION CIRCUIT AND METHOD USING SUBKEYS

George I. Davida, Whitefish Bay; David L. Wells, Milwaukee, both of Wis., and John B. Kam, New York, N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 30, 1980, Ser. No. 117,140
Int. Cl.[3] H04L 9/00
U.S. Cl. 178—22.10 2 Claims



1. A method for encryption of a data record consisting of a plurality of fields, f_i, and for decryption of a field, f_i, from the encrypted record, comprising the steps of:

choosing a read key, d_i, and write key, e_i, corresponding to each field, i, such that each d_i is a prime number, D is the product of all d_i and each e_i is chosen such that $e_i=1$ modulo d_i, and $e_i=0$ modulo d_j for all $j \neq i$;

multiplying each of said plurality of fields by said corresponding key field, e_i, to yield an intermediate product;

summing all of said intermediate products modulo D to yield an encrypted version of said data record;

decrypting a field f_i from said encrypted version of said data record by dividing said encrypted version of said data record by said read key d_i corresponding to said field f_i to yield a decrypted version of said field f_i;

concatenating each of said plurality of fields, f_i, with a randomly chosed number prior to multiplication by said corresponding key field; and

removing said randomly chosen number from said decrypted version of said field f_i after decryption.

4,375,580

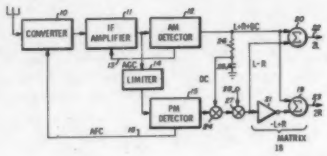
AM STEREO RECEIVER SEPARATION CONTROL

Don R. Sauer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 27, 1980, Ser. No. 200,636

Int. Cl.³ H04H 5/00

U.S. Cl. 179—1 GS **6 Claims**



1. An AM stereo radio receiver in which L+R signal information is transmitted via conventional amplitude modulation of a carrier signal and L−R signal information is transmitted via phase modulation of said carrier, said receiver comprising:

a matrix circuit for combining said L+R and L−R information to create L and R stereo signals;

an amplitude modulation detector for producing said L+R signal along with a d-c component related to the average value of said L+R carrier;

a phase modulation detector for producing said L−R signal;

a first multiplier circuit having first and second inputs and an output coupled to said matrix circuit;

means for coupling said first input of said first multiplier to said phase modulation detector;

means for coupling said second input of said first multiplier to receive said d-c component from said amplitude modulation detector whereby said L−R signal out of said first multiplier is varied in amplitude so to track the amplitude of said L+R signal at said amplitude modulation detector;

a second multiplier circuit coupled in cascade with said first multiplier circuit; and

means for varying the signal transfer of said second multiplier whereby the amplitude of said L−R signal can be varied relative to said L+R signal to create blending of said L and R signals.

4,375,581

DIGITAL TRANSMISSION ERROR REDUCTION

Nuggehally S. Jayant, Short Hills, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 30, 1980, Ser. No. 163,971

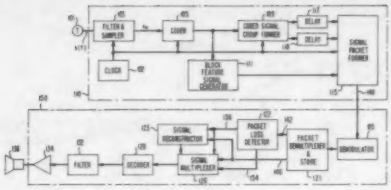
Int. Cl.³ H04J 6/02

U.S. Cl. 179—15.55 R **32 Claims**

8. A method for processing signals comprising the steps of receiving an input signal, and converting segments of said input signal into coded signal packets

characterized in that

said input signal converting step comprises generating a sequence of coded signals responsive to said input signal; arranging the sequence of coded signals in successive coded signal blocks, each block corresponding to an input signal segment; dividing each block of coded signals into a plurality of groups; generating a signal responsive to the coded signals of each block representative of a waveform feature of the segment of the input signal corresponding to the block, the waveform feature signal of each block being adapted to modify one coded signal group of the block to approximate another coded signal group of the block; and



combining the waveform feature signal of each block with each coded signal group of said block to form said coded signal packets.

4,375,582

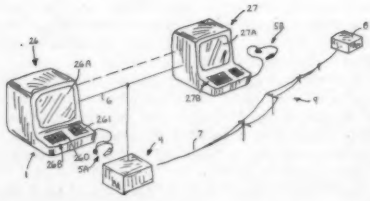
TELEPHONE ANSWERING SYSTEM AND METHOD

Larry B. Gist, 1865 E. Broadway - #423, and Carroll D. Carruth, Jr., 4605 S. Priest - #416, both of Tempe, Ariz. 85282

Filed Feb. 4, 1981, Ser. No. 231,579

Int. Cl.³ H04M 3/50

U.S. Cl. 179—27 FH **25 Claims**



1. A telephone answering system coupled to a plurality of telephone company trunks, said telephone answering system comprising in combination:

(a) processor means for executing program instructions;

(b) memory means responsive to said processor means for storing subscriber messages received from persons placing calls to subscribers of said telephone answering system and subscriber information about said subscribers;

(c) entry means coupled to said processor means for permitting entry of commands and said subscriber messages into said telephone answering system;

(d) display means for displaying which trunks are presently ringing, which trunks are presently on hold, subscriber information corresponding to a trunk presently being answered, and subscriber messages taken from callers who have telephoned messages to one of said subscribers;

(3) means for effecting voice communication between an operator of said telephone answering system and a selected trunk; and

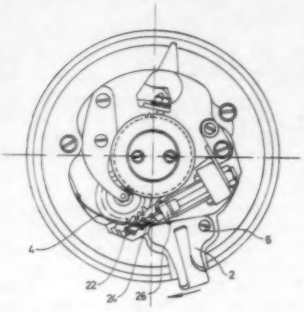
(f) means responsive to said processor means for selectively effecting electrical coupling of a selected one of said trunks to said voice communication effecting means, wherein said coupling means includes voice coupling means responsive to said processor means for transmitting a status signal representing a condition occurring on a first one of said trunks to said processor means to cause said voice coupling means to effect electrical coupling of said first trunk to a first transmit conductor and a first receive conductor.

4,375,583

INDIRECTLY ACTIVATABLE TELEPHONE SYSTEM

Yitzhak Halperin, and Dov Zioni, both of Jerusalem, Israel, assignors to Institute for Science and Halacha, Jerusalem, Israel

Filed Apr. 9, 1981, Ser. No. 252,431
Claims priority, application Israel, Jan. 3, 1978, 53743
Int. Cl.³ H04M 1/26
U.S. Cl. 179—90 AD 18 Claims



1. In a dial telephone an arrangement for the indirect impulsing of a number dialed, said arrangement comprising:

a. an impulsing means adapted to provide impulses of preset intervals to effect the actuation of a circuit completion means;

b. shielding means movably mounted with respect to said impulsing means to control the effecting of the completion of said circuit and adapted to be moved upon the dialing of a number;

c. means for detaining the dial mechanism at its dialed position and for preventing the same from returning to its normal undialed position; and

d. circuit means actuated by said circuit completion means and adapted to operate said dial mechanism detaining means to thereby release the same and effect the standard dialing operation for each number dialed after the actuation of said circuit completion means.

4,375,584

MODULAR TELEPHONE KEYSET STRUCTURE

Deepak Muzumdar; William Levine, both of Boca Raton; Gerry Suarez, West Palm Beach; Rolf Schneider, Boca Raton, and Theodore W. Wagner, West Palm Beach, all of Fla., assignors to Siemens Corporation, Iselin, N.J.

Filed Oct. 6, 1980, Ser. No. 194,622
Int. Cl.³ H04M 1/02
U.S. Cl. 179—100 D 23 Claims

1. A telephone keyset structure comprising, in combination:

(a) a substantially rectangular casing having a bottom, a top and four sides, said top having two indentations on one side thereof for receiving the microphone and earphone, respectively, of a telephone handset and having a plurality of openings in the central portion thereof for receiving telephone keys:

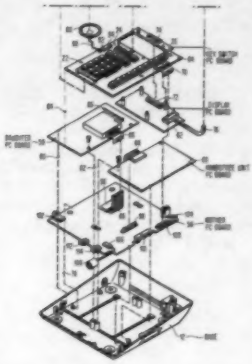
(b) a mother printed circuit board adapted to be electrically connected with a telephone subscriber line and with said handset, said mother printed circuit board being arranged within said casing above and substantially parallel to said bottom and being laterally coextensive with substantially all of said bottom;

(c) a daughter printed circuit board arranged within said casing above and substantially parallel to said mother printed circuit board and being laterally coextensive with at least the portion of said mother printed circuit board which lies beneath said indentations of said top;

(d) a key switch printed circuit board arranged within said casing above said daughter printed circuit board and directly beneath said top, said key switch printed circuit board being substantially parallel with said top and being laterally coextensive with the central portion of said top which includes said openings for said keys but excludes said indentations;

(e) a first, flexible electrical cable connecting said mother printed circuit board with said daughter printed circuit board;

(f) a second flexible, electrical cable connecting said mother



printed circuit board with said key switch printed circuit board;

(g) a telephone hook switch, mounted on said daughter printed circuit board and having a portion thereof extending through one of said indentations in said top, said hook switch being adapted to be actuated when said telephone handset is placed in said indentations; and

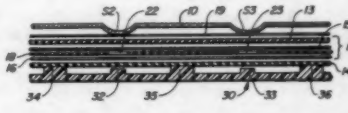
(h) a plurality of telephone key switches mounted on said key switch printed circuit board and having telephone keys extending through said openings in said top to permit manual actuation thereof.

4,375,585

DEFORMABLE SWITCH KEYBOARD

Hugh Lee, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 223,654, Jan. 8, 1981, abandoned. This application Jun. 14, 1982, Ser. No. 387,900
Int. Cl.³ H01H 13/70, 9/00
U.S. Cl. 200—5 A 6 Claims



1. A keyboard assembly comprising:

a flexible unitary top member having a plurality of switch site defining regions arranged in a predetermined array to define a keyboard;

a compressible intermediate switch assembly having a plurality of switch sites each underlying a different one of said projections; and

a bottom member underlying said intermediate switch assembly and having a first and second plurality of projections extending toward said top member, each of said first plurality of projections underlying a different one of said switch sites, each of said second plurality of projections

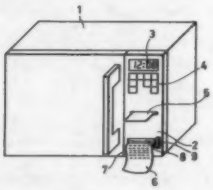
being located intermediate different adjacent ones of said switch sites, said second plurality of projections being longer than said first plurality of projections so as to contact the lower surface of said intermediate switch assembly, each of said first plurality of projections providing a compression contact beneath said intermediate switch assembly when the corresponding top member region is advanced toward said bottom member by a predetermined distance, said second plurality of projections providing mechanical isolation between the switch site underlying an advanced one of said top member regions and the remainder of said switch sites.

4,375,586

COOKING ASSISTANCE DEVICE AND A COMBINATION THEREOF WITH A MICROWAVE OVEN

Shigeki Ueda, Nara, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Jun. 13, 1980, Ser. No. 159,197
Claims priority, application Japan, Jun. 15, 1979, 54/76129
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **6 Claims**



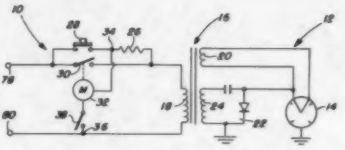
1. A cooking apparatus comprising:
a microwave oven having a source of microwave energy;
a memory for storing standard menu data representing a list of materials and quantity of each of said materials for a predetermined number of servings and standard heating pattern data representing a power level and an operating time of said microwave energy source for said predetermined number of servings;
a data entry unit for manually entering into said memory quantity data representing a desired number of servings to be prepared;
a printer;
a power control unit for controlling the power level and operating time of said microwave energy source in response to stored and manually entered data applied thereto; and
a data processing unit including:
means responsive to said manually entered quantity data for converting said standard menu data into actual menu data representing a list of materials and quantity of each of said materials for said desired number of servings and converting said standard heating pattern data into actual heating pattern data representing a power level and an operating time of said microwave energy source for said desired number of servings;
means for converting said actual menu data into corresponding print data and applying the print data to said printer to provide a printout of said list of materials and quantity of each said material for said desired number of servings according to which a user prepares food;
means for writing said actual heating pattern data into said memory; and
means for reading said actual heating pattern data out of said memory into said power control unit when said food is placed in said oven.

4,375,587

MICROWAVE OVEN ENERGIZATION CIRCUIT AND COMPONENTS THEREFOR

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Aug. 13, 1980, Ser. No. 177,777
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **6 Claims**



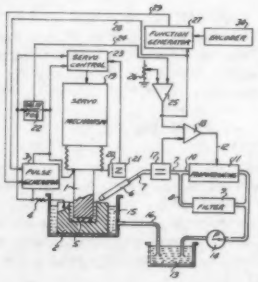
1. In a microwave oven, a magnetron for generating high frequency energy, a fan motor for cooling said magnetron, and an energization circuit for said magnetron and motor, said circuit including start switch means for providing starting current in the energization circuit for effecting energization of said magnetron, said start switch means comprising a first switch and a protective resistor coupled in series circuit relation, a second switch connected in parallel with such series circuit, actuator means movable by the magnetic field induced in said motor upon energization for operating said second switch, and circuit means connecting said motor to said first and second switches for energization of said motor through either one of said first and second switches.

4,375,588

PROCESS AND APPARATUS FOR CONTROLLING THE CONCENTRATION OF SOLID PARTICLES IN SUSPENSION IN AN EDM MACHINING FLUID

Charles Frei, Onex, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Nov. 21, 1980, Ser. No. 208,935
Claims priority, application Switzerland, Dec. 6, 1979, 10819/79
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 M **12 Claims**



1. A method for electrical discharge machining of an electrode workpiece by an electrode tool wherein a machining fluid is circulated through a machining zone between the electrodes, said machining fluid comprising electrical conductive solid particles in suspension in a liquid, and wherein voltage pulses are applied across the electrodes for triggering delayed electrical discharges and the concentration of particles in the machining fluid is varied as a function of a machining parameter, the improvement comprising measuring the average triggering delay of said electrical discharges, and varying said

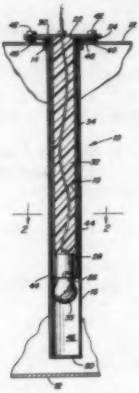
concentration of solid particles for maintaining the average triggering delay of said electrical discharges within predetermined limits.

4,375,589

DIESEL FUEL TANK HAVING REMOVABLE ELECTRIC IMMERSION HEATER ASSEMBLY

Elmer M. Combs, Rock Springs, Wyo., assignor to B & C Enterprises, Green River, Wyo.

Filed Sep. 26, 1980, Ser. No. 191,309
Int. Cl.³ H05B *3/82*; F24H *1/20*; F02N *17/04*
U.S. Cl. 219—315 **4 Claims**



1. In combination with a material holding tank having an opening in the top surface thereof, an immersion heater insertable through said opening for immersion in the material contained in said tank, said heater comprising an elongated heat conduction means in contact with the material to be heated and extending generally vertically across substantially the entire height of the tank from said top surface to the bottommost portion of the tank,

an electric heating element positioned within the heat conduction means and serving as a source of heat to be transferred to the material to effect a heating thereof,

said heat conduction means including an elongated outer tubular member of cylindrical configuration and having an open upper end and a closed lower end, the upper end of said outer tubular member being sealingly secured in said opening with the open end thereof opening outwardly of the tank,

said heat conduction means further including an inner tubular member of cylindrical configuration coextensive in length with a major portion of the length of the outer tubular member and coaxially removably inserted within the outer tubular member through said open end thereof, said inner tubular member having an outer diameter slightly smaller than the inner diameter of said outer tubular member and a lower end spaced from the closed end of the outer tubular member, said heating element being fixedly secured to the lower end of said inner tubular member and extending into space between said lower end and said closed end, respectively, of said inner and outer tubular members,

heat flow control means comprising an air filled, narrow, cylindrical space between the outer tubular member and the inner tubular member extending substantially throughout the entire length of the inner tubular member as well as around the entire circumference thereof adapted to receive therein by convective circulation heat generated by the heating element so conduction by a highly efficient heat transfer is afforded from said outer tubular member of the heat conduction means throughout essentially the entire length thereof to the material,

an electric wire directed through an interior portion of the inner tubular member and connected at one end thereof to the heating element and extending outwardly through a circular plate flanged member secured to and closing the other end of said inner tubular member for connection with a source of electrical energy, the inner tubular member of said conduction means comprising an electrical return path for connection with the source of electrical energy connected to the heating element, and

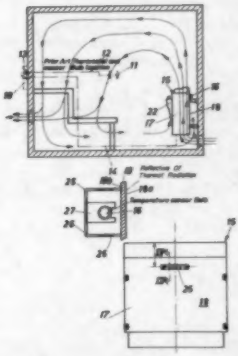
heat insulation material essentially filling the inner tubular member throughout and being of a low heat capacity thereby augmenting maximal heat transfer from the heat conduction means to the material to be heated.

4,375,590

TEMPERATURE REGULATOR MOUNTING ARRANGEMENT FOR ELECTRIC SAUNA HEATING UNITS

Mats O. Janson, Port, Switzerland, assignor to Tylo Sauna S.A. Corporation, Biel-Bienne, Switzerland

Filed Dec. 11, 1979, Ser. No. 102,369
Claims priority, application Sweden, Jun. 14, 1979, 7905230
Int. Cl.³ H05B *1/02*; A61H *33/06*; F24H *9/20*
U.S. Cl. 219—364 **2 Claims**



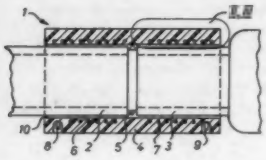
1. In an electric sauna heating unit having electric heating elements arranged in a casing which is open at its top and bottom for air flow therethrough over the heating elements, and including a temperature regulator comprising a transmitter for sensing the temperature in the sauna room, a thermostat, means operably connecting said transmitter to said thermostat and means operably connecting said thermostat to said electric heating elements so that the thermostat connects or disconnects the heating elements in response to signals from said transmitter, the improvement comprising said transmitter being mounted on an imperforate sidewall of the casing of the sauna heating unit in spaced relationship to the sidewall and arranged so as to be exposed only to the air flow in the sauna room and not directly to the air flow eminating from the heating unit, said transmitter being located substantially horizontal and symmetrical relative to the vertical center line of the heating unit and within the upper third of the height of the heating unit at a distance of 10–20 cm from the upper edge of the heating unit, and a heat-reducing means in at least the area of said sidewall located adjacent the transmitter comprising at least said area of said sidewall being a material which reflects the heat radiation from the heating elements back towards said elements, a control case mounted on the sauna heating unit, and said thermostat being mounted in said control case.

4,375,591

THERMOPLASTIC WELDING SLEEVE

Werner Sturm, Allerheiligenstrasse 624, Hägendorf, Switzerland

Filed Aug. 17, 1981, Ser. No. 293,383
Claims priority, application Switzerland, Aug. 29, 1980, 6545/80
Int. Cl.³ H05B 3/58
U.S. Cl. 219—544 8 Claims



1. A welding sleeve for joining thermoplastic line members, comprising:

an inner body of thermoplastic material extending along an axis, having an outer surface with grooves separated by webs and having an inner surface, said inner body having a wall thickness between bottoms of said grooves and said inner surface which increases toward an axial center of said inner body;

a resistence heating wire received in said groove at said bottoms thereof; and

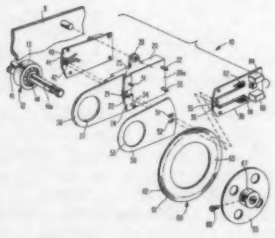
an outer body of thermoplastic material surrounding said inner body and said wire and extending into said grooves.

4,375,592

INCREMENTAL ROTARY ENCODER

Gerald L. Cox, Nicholasville, and Randall A. Maddox, Georgetown, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,153
Int. Cl.³ G01D 5/34
U.S. Cl. 250—231 SE 2 Claims



1. An incremental encoder for attachment intermediate the frame of a machine and a rotatably mounted shaft, said encoder comprising:

a housing including at least a pair of closely adjacent circumferentially spaced apart passages therethrough;

said passages each including converging sidewall tunnel like portions terminating in a narrow opening;

means for mounting a pair of light sources in said passages recessed from said narrow openings and means for mounting a pair of light detectors aligned with said passages and positioned to receive light from said sources;

means defining a slot intermediate said pairs of light sources and light detectors;

a mask having a pair of slits aligned with said passages, said slits having a narrower opening than the width of the narrow opening of said passages, a bearing on said shaft, said bearing having inner and outer races, said outer race being connected to said machine frame to inhibit rotation thereof and said inner race being coupled to said shaft to effect rotation therewith said mask fixedly mounted on said housing, and means on said mask for locating said mask on the outer race of said bearing;

said passages positioned in said housing for confronting said mask;

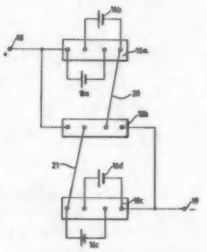
a disc having interdigitated opaque and transparent portions adjacent the periphery thereof, and hub means for mounting said disc thereon, said hub means including an annular projection thereon for engagement with the inner race of said bearing to axially position said disc relative to said mask, and means for connecting said hub to said shaft for aligning said opaque and transparent portions with said passages in said slot.

4,375,593

SWITCHING APPARATUS FOR LOAD MATCHING OF WIND-DRIVEN ELECTRICAL GENERATORS

Harold Winterbotham, Fern Howe, Braithwaite, Keswick, Cumbria CA12, England

Filed Jul. 17, 1981, Ser. No. 284,214
Int. Cl.³ H02J 3/14
U.S. Cl. 307—37 18 Claims



1. Switching apparatus for matching an even number of equal electrical loads to the voltage output of a wind-driven generator, said switching apparatus comprising means for switching the even number of electrical loads into series and/or parallel combinations and control means coupled to said switching means and responsive to the voltage output of the generator for effecting a switching sequence at given voltage thresholds whereby the loads are progressively switches from a parallel arrangement to a series arrangement as the output voltage increases from a minimum to maximum value and the loads are progressively switched from a series arrangement to a parallel arrangement as the output voltage decreases from a maximum to a minimum value.

4,375,594

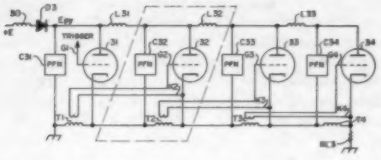
THYRATRON MARX HIGH VOLTAGE GENERATOR

Theodore F. Ewanizky, Jr., Manasquan, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 12, 1981, Ser. No. 224,604
Int. Cl.³ H02M 3/18
U.S. Cl. 307—110 5 Claims

1. A Marx generator comprising a plurality of stages between a direct-current source and a load, each stage comprising an electrostatic storage device and a thyratron having cathode, grid and anode electrodes, a plurality of anode impedance devices each connected between the anode electrodes of two adjacent stages, a plurality of cathode impedance devices, one connected between the cathode electrode of the first stage and a reference point and one connected between the cathode electrodes of each adjacent stage, each of said electrostatic storage devices having two terminals, one connected to the

anode electrode of the same stage and the other coupled to a reference point, said coupling to a reference point being direct in the first stage and including said cathode impedance devices for the intermediate stages, said load being connected between the cathode electrode of the last of said stages and said reference point, charging means coupling said direct-current source between the anode electrode of the first stage and said reference point to charge all of said electrostatic storage devices in



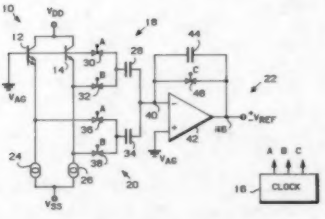
parallel, the grid electrode of at least the first stage being coupled to an external trigger source, trigger means for the other stages, so that in response to a trigger signal from said external trigger source, the thyratron of the first stage and the other stages are fired into conduction, which effectively connects all of said electrostatic storage devices in series to supply an output pulse to said load of the same polarity as said direct-current source.

4,375,595

SWITCHED CAPACITOR TEMPERATURE INDEPENDENT BANDGAP REFERENCE

Richard W. Ulmer, and Roger A. Whatley, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1981, Ser. No. 231,073
Int. Cl.³ H03K *3/01, 3/26*
U.S. Cl. 307—297 **7 Claims**



1. A circuit for producing a substantially temperature independent reference voltage, the circuit comprising:

first and second bipolar transistor means having a predetermined base voltage and biased at different current densities to develop first and second emitter voltages, respectively, on the emitters thereof;

clock means for alternately providing first and second non-overlapping clock signals;

first switched capacitance means coupled to said base voltage in response to the first clock signal and to said first emitter voltage in response to the second clock signal, for providing a first charge related to the V_{be} of the first transistor means;

second switched capacitance means coupled to said second emitter voltage in response to the first clock signal and to said first emitter voltage in response to the second clock signal, for providing a second charge related to the difference in the V_{be} of the first and second bipolar transistor means; and

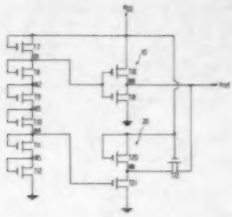
amplifier means coupled to the first and second switched capacitance means for providing a reference voltage proportional to the sum of the first and second charges.

4,375,596

REFERENCE VOLTAGE GENERATOR CIRCUIT

Katsuji Hoshi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1980, Ser. No. 208,458
Claims priority, application Japan, Nov. 19, 1979, 54-149830
Int. Cl.³ H02J *1/04;* **H03L** *1/00*
U.S. Cl. 307—297 **17 Claims**



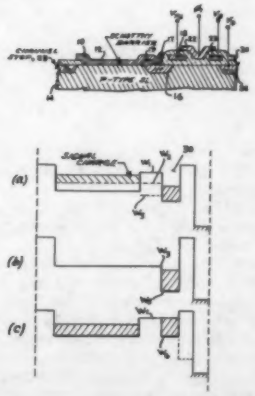
1. A circuit comprising means for receiving a power supply voltage, dividing means for producing first and second divided voltages by dividing said power supply voltage, first response means receiving said first divided voltage for generating a first voltage whose value is increased from its initial value as said first divided voltage increases in value, second response means receiving said second divided voltage for generating a second voltage signal whose value is decreased from its initial value as said second divided voltage increases in value, means coupled to output terminals of said first and second response means for producing an averaged voltage signal of said first and second voltage signals, the averaged voltage signal having substantially constant value irrespective of increase in said power supply voltage, and means for outputting said averaged voltage signal.

4,375,597

METHOD OF IMPLEMENTING UNIFORM BACKGROUND CHARGE SUBTRACTION IN A RADIATION SENSING ARRAY

Walter F. Kosonocky, Skillman, N.J., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 25, 1980, Ser. No. 191,044
Int. Cl.³ H03K *3/42;* **H01L** *29/78, 27/14, 31/00*
U.S. Cl. 307—311 **7 Claims**



1. The method of implementing uniform background charge

subtraction in a radiation sensing array, said array being comprised of a substrate, a radiation sensor integral to said substrate and having a charge storage reservoir therein, a register means adjacent thereto integral to said substrate having a channel with multiple charge storage sites including a first charge storage site well in adjacent proximity to and in charge exchange relationship with said charge storage reservoir through a transfer gate disposed therebetween, and a drain integral to said substrate and in proximate juxtaposition to said channel, charge from said first charge storage site well being transferrable to said drain by means of a drain barrier gate electrode disposed therebetween, said method including, for each sensor array integration period,

(1) a first operation comprised of the execution of n repetitions, n being an integer, of a sequence of steps comprising:

(a) accumulating signal, background and bias charge in said charge storage reservoir,

(b) transferring said accumulated charge into said first charge storage site well,

(c) transferring a portion of said transferred accumulated charge back into said charge storage reservoir while retaining a preset amount of charge in said first charge storage site well, and

(d) transferring said retained preset amount of charge from said first charge storage site well to said drain, and

(2) subsequent to the nth repetition a second operation comprised of

(a) skimming signal charge from said charge storage reservoir into said first charge storage site well, and

(b) transferring said signal charge from said first charge storage site well to another charge storage site in said register means.

4,375,598

TRANSISTOR CIRCUIT HAVING TWO COMPARATOR LEVELS

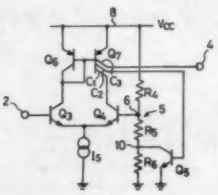
Koichi Sakai, Tokyo, Japan, assignor to Toko, Inc., Tokyo, Japan

Filed Apr. 3, 1980, Ser. No. 136,752

Claims priority, application Japan, Apr. 5, 1979, 54-045150[U]

Int. Cl.³ H03K *5/153*

U.S. Cl. 307—360 **2 Claims**



1. A transistor circuit having two different comparator reference levels to establish stable hysteresis comprising:

an input terminal;

an output terminal;

a comparator reference level applied terminal;

a constant current source;

first and second transistors having emitters connected respectively to said constant current source and having bases connected respectively to said input terminal and said comparator reference level applied terminal;

a comparator reference level generator including a plurality of resistors arranged in series, and being connected to said comparator reference level applied terminal for selectively generating and applying to said applied terminal one of said two comparator reference levels;

a third transistor the collector and the emitter of which are connected across one of the resistors of said comparator reference level generator;

a current mirror circuit including a fourth transistor and a multi-collector transistor, the base of said fourth transistor being connected to both the collector of said fourth transistor and the collector of said first transistor, and the emitter of said fourth transistor being connected to a power supply, said multi-collector having first, second and third collectors, the base of said multi-collector transistor being connected to the base of said fourth transistor, said first collector being connected to the collector of said second transistor, said second collector being connected to the base of said third transistor, said third collector being connected to said output terminal, and the emitter of said multi-collector transistor being connected to the power supply.

4,375,599

METHOD AND CIRCUIT FOR THE CONVERSION OF VARIABLE PHYSICAL QUANTITIES OCCURRING IN VEHICLES REPRESENTED AS FREQUENCIES INTO NUMERICAL VALUES OR SIGNALS PROPORTIONAL TO THE FREQUENCIES

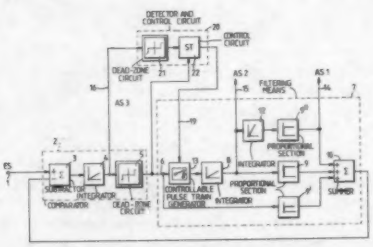
Hans W. Bleckmann, Frankfurt am Main, Fed. Rep. of Germany, and Heinz Loreck, Moedling, Austria, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,386

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951755

Int. Cl.³ H03K *9/06, 5/08;* B60T *8/02*

U.S. Cl. 307—519 **22 Claims**



1. A method for the conversion of a variable physical quantity occurring in a vehicle represented by frequency variations being temporarily disturbed at times into a numerical signal proportional to said frequency variations suitable for further processing comprising the steps of:

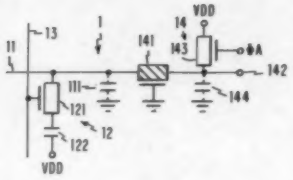
converting said frequency variations into signals corresponding to a time derivative of said physical quantity for comparison to a plurality of predetermined threshold values; and

integrating and transforming said frequency variations and said converted signals combined therewith as a feedback signal to generate said numerical signals, said numerical signals being generated on the basis of the instantaneous value of said converted signals with a change of transfer characteristic whenever said converted signals are outside of said plurality of predetermined threshold values.

4,375,600
SENSE AMPLIFIER FOR INTEGRATED MEMORY ARRAY

Philip T. Wu, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 84,030, Oct. 11, 1979, abandoned. This application May 5, 1981, Ser. No. 260,557
Int. Cl.³ G11C 7/06; G01R 19/165; H03K 5/24, 5/08
U.S. Cl. 307—530 7 Claims



1. In a memory array having a bit line connected to a set of storage cells, and having a source for producing at least one clock phase during a portion of a storage cycle of said memory array, a sense amplifier comprising:

a depletion FET of a predetermined channel polarity and having a source coupled to said bit line, a drain coupled to a sense node, and a gate connected directly to a ground potential; and

a further FET of the same predetermined channel polarity and having a source coupled to said sense node, a drain coupled to a compatible supply potential, and a gate connected to receive said one clock phase so as to switch said further FET both on and off during said storage cycle.

4. In a memory array having first and second bit lines connected to first and second sets of storage cells, and having a source for producing multiple clock phases during a storage cycle of said memory array, a sense amplifier comprising:

first and second depletion FETs each of the same predetermined channel polarity and having a source connected to one of said bit lines, a drain connected to one of first and second sense nodes, and a gate connected directly to a ground potential;

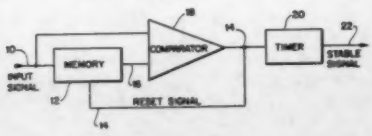
third and fourth FETs each of said same predetermined channel polarity and having a source connected to one of said sense nodes, a drain connected to a compatible supply potential, and a gate connected to a first of said clock phases; and

fifth and sixth FETs each having a source connected to a second of said clock phases, a drain connected to one of said sense nodes, and a gate connected to an opposite one of said sense nodes so as to form a latch circuit.

4,375,601
SIGNAL STABILITY RECOGNITION

James G. Van Vliet, La Habra, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 7, 1980, Ser. No. 166,521
Int. Cl.³ H03K 17/28, 5/26
U.S. Cl. 307—592 4 Claims



1. Apparatus for indicating when an input signal remains sufficiently stable for a predetermined length of time, comprising:

memory means, responsive to the input signal and a reset signal, for producing a memory signal equal to the value of the input signal at the time of the most recent occurrence of the reset signal;

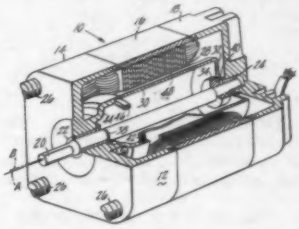
comparator means responsive to the memory signal and to the input signal for producing the reset signal when the input signal differs from the memory signal by an amount greater than that allowed by a predetermined comparison criterion; and

resettable timing means responsive to the reset signal for indicating that the input signal is stable by generating a signal only when the reset signal has not been produced for a time exceeding the predetermined length of time.

4,375,602
ONE LOBED MOTOR

John H. Carlson, Danvers, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 8, 1980, Ser. No. 185,345
Int. Cl.³ H02K 7/06
U.S. Cl. 310—83 13 Claims



1. A motor comprising:

a motor housing including a first and a second end cap;

a stator having energizable poles therearound, and said stator also having a generally axially arranged bore, said stator being axially disposed within said housing;

an output member arranged in said motor;

a rigid cylinder arranged with said stator, said cylinder having a flexible support arranged at one end thereof, and a first gear arranged at the other end of said cylinder;

a second gear supported adjacent said first gear, wherein selective energization of said poles effectuates orbital motion of said cylinder and rotational motion in said output member.

4,375,603
SHUNT-WOUND CONTROL FOR ON-ROAD VEHICLE

Charles E. Konrad, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed May 20, 1981, Ser. No. 265,527
Int. Cl.³ H02P 5/06, 5/28, 7/06
U.S. Cl. 318—139 10 Claims

1. A power control system for a DC electric motor having an armature and a field winding each adapted to be energized from a DC power source, the system comprising:

(a) controllable power regulating means;

(b) means for connecting said power regulating means and the motor field winding in a series current path with the DC power source;

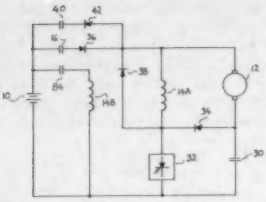
(c) normally open first switch means;

(d) means for connecting said first switch means and the motor armature in a series current path with the DC power source;

(e) component means for connecting a junction intermediate the motor armature and said first switch means to a junction intermediate the motor field winding and said regulating

means whereby the series combination of motor armature and said component means is connected in a parallel current path with the motor field winding; and

(f) control means for varying the conduction of said power regulating means to thereby increase or decrease current through both the armature and the field winding substan-



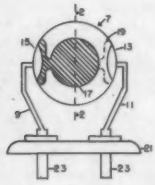
tially simultaneously in a first operational mode, said control means including means for actuating said first switch means when the voltage on the armature attains a predetermined value and for thereafter regulating current only through the field winding in a second operational mode while maintaining actuation of said first switch means.

4,375,604

METHOD OF ANGLE CORRECTING DOUBLY ROTATED CRYSTAL RESONATORS

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 27, 1981, Ser. No. 238,895
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—312 **13 Claims**



1. A method for modifying the frequency vs. temperature characteristic of a quartz crystal resonator blank having at least one convex surface of contour D_i, to have a new slope, $df/dT|_{Df}$ at the point of inflection, comprising the steps of:

(A) measuring the frequency vs. temperature characteristic of the blank with contour D_i,

(B) determining from said frequency vs. temperature characteristic the slope, $df/dT|_{Di}$ at the point of inflection,

(C) determining from the following formula the diopter value, D_f, required to yield the desired new slope, $df/dT|_{Df}$ at the point of inflection,

$$D_f = \frac{df}{dT}\Big|_{D_i} - \frac{df}{dT}\Big|_{D_f} + p_{fT}D_i$$

wherein p_{fT} is the measured value of the change in inflection point slope for a unit step change in diopter value,

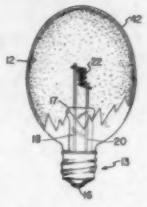
(D) then re-contouring at least one convex side of said blank to the calculated new diopter value, D_f.

4,375,605

ELLIPSOIDAL ENVELOPE FOR INCANDESCENT LAMP WITH INFRARED ENERGY RETURN MEANS

Raymond P. Fontana, Waldwick, and Peter Walsh, Stirling, both of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.

Continuation of Ser. No. 76,358, Sep. 17, 1979, abandoned. This application May 18, 1981, Ser. No. 264,234
Int. Cl.³ H01K *1/14*
U.S. Cl. 313—112 **9 Claims**



1. An incandescent electric lamp comprising:

an ellipsoidal shaped envelope having a base portion, said envelope defining a major axis on which is a pair of spaced focal points,

an incandescent filament mounted within said envelope,

means for supplying electrical energy to said filament to cause it to incandesce to produce energy in both the infrared and the visible range,

means for cooperating with said envelope to return to the filament a substantial portion of the infrared energy produced by said filament and for transmitting therethrough a substantial portion of the visible range energy produced by said filament;

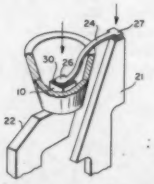
said filament being elongated, generally cylindrical and linear along its major axis, at least as long as the distance between the two foci of the major axis of the envelope, and being mounted along the major axis of the ellipsoidal envelope so that the two foci of the ellipsoid are located on the filament a spaced points therealong.

4,375,606

MICROELECTRONIC DEVICE

Daniel A. Di Leo, Hopewell Township, Mercer County, N.J.; Samuel E. Kurtz, Muhlenberg Township, Berks County, and John J. Svitak, Lower Makefield Township, Bucks County, both of Pa., assignors to Western Electric Co., New York, N.Y.

Continuation of Ser. No. 99,159, Nov. 30, 1979, which is a division of Ser. No. 966,411, Dec. 4, 1978, Pat. No. 4,209,358. This application Jan. 18, 1982, Ser. No. 339,948
Int. Cl.³ H05B *33/06*; H01L *33/00*
U.S. Cl. 313—499 **6 Claims**



1. A light emitting diode assembly comprising:

a light emitting diode having a thin coating of a noble metal deposited on a portion thereof;

at least one electrically conductive lead having a thin coating of a noble metal deposited thereon; and

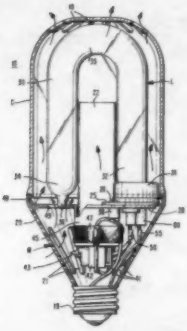
an unfilled epoxy connecting the noble metal coated portion of the light emitting diode to the noble metal coating of the electrically conductive lead.

4,375,607

COMPACT LAMP UNIT HAVING PLUG-IN FLUORESCENT LAMP AND MODULE COMPONENTS

Edward W. Morton, Teaneck; Thomas E. Dooley, Clifton, and Daniel W. O'Mullan, Bloomfield, all of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 23, 1981, Ser. No. 246,502
Int. Cl.³ H01J 7/44
U.S. Cl. 315—56 17 Claims



1. An electric lamp unit adapted for use in lighting apparatus that requires a light source of compact size and includes socket means, said lamp unit comprising;

a low-pressure electric discharge lamp having a convoluted envelope that is formed from tubular light-transmitting vitreous material and contains an ionizable medium and a pair of electrodes, said convoluted envelope defining a tortuous discharge channel of such configuration that the ends of the envelope are disposed proximate one another, said discharge lamp having a base member that joins the ends of the convoluted envelope and includes protruding contact elements that are connected to the respective electrodes,

a protective housing of light-transmitting material enclosing said convoluted discharge lamp,

a module releasably secured to said protective housing and terminated by a base-connector component that is adapted to releasably engage the socket means of said lighting apparatus,

electrical-conductor means within said module connected to said base-connector component, and

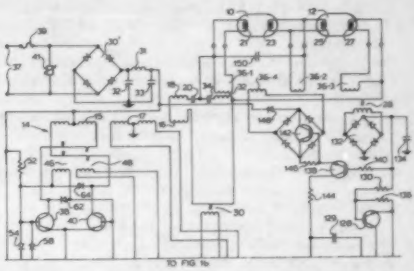
means electrically and mechanically coupling the module to the convoluted discharge lamp comprising a plate-like mounting member that (a) is fastened to interior portions of the module and is held thereby in suspended transversely-extending position within the module remote from the base-connector component so that said mounting member and module define a chamber and constitute an integral subassembly, (b) includes electrical-receptacle means that are disposed in slip-fitted plug-in engagement with the protruding contact elements of the convoluted discharge lamp and connect the discharge lamp to the electrical-conductor means located within the module, and (c) has anchoring means which releasably engages the based end of the discharge lamp and holds the lamp in interfitted upstanding relationship with the mounting member so that the discharge lamp and protective housing can both be detached and separated from the module.

4,375,608

ELECTRONIC FLUORESCENT LAMP BALLAST

Thomas P. Kohler, Baldwinsville, N.Y., assignor to Beatrice Foods Co., Chicago, Ill.

Filed May 30, 1980, Ser. No. 154,947
Int. Cl.³ G05F 1/00
U.S. Cl. 315—307 14 Claims



1. An electronic ballast-inverter circuit for fluorescent lamps comprising,

a transformer having primary and secondary windings, said secondary winding adapted to be connected in series with a fluorescent lamp,

a capacitor and an inductor connected in series with said secondary winding,

a source of DC connected to a center tap of said primary winding,

a transistor connected to one end of said primary winding for selectively drawing current through one-half of said primary winding,

a feed-back circuit including means for sensing current flowing through said fluorescent lamp for controlling operation of said transistor in response to said current,

a pair of transistors, one connected to each of said primary windings,

said feedback circuit including comparator means for comparing the current flowing through the primary of said transformer with the current flowing through the secondary of said transformer, and

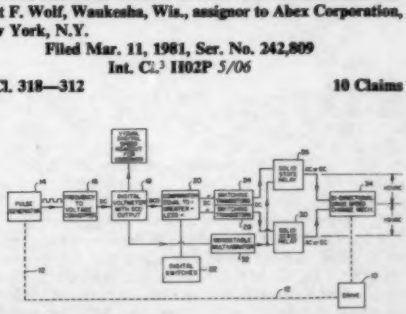
means responsive to said comparison for alternatively causing said pair of transistors to conduct mutually exclusively.

4,375,609

ANALOG/DIGITAL DRIVE SPEED CONTROL CIRCUIT

Robert F. Wolf, Waukesha, Wis., assignor to Abex Corporation, New York, N.Y.

Filed Mar. 11, 1981, Ser. No. 242,809
Int. Cl.³ H02P 5/06
U.S. Cl. 318—312 10 Claims



1. A speed control circuit comprising a device having a rotatable shaft,

means for generating a voltage signal which is proportional to the rotational speed of the shaft,

a digital voltmeter having a binary coded decimal output,

means for supplying the voltage signal to the digital voltmeter,

a digital comparator having a greater than output signal and a less than output signal,

means for supplying the output of the digital voltmeter to the digital comparator,

means for generating a reference which indicates a desired shaft speed,

means for supplying the reference to the digital comparator,

a bi-directional control mechanism for changing the speed of the shaft,

first means for operating the bi-directional control mechanism in one direction to cause the speed of the shaft to increase,

second means for operating the bi-directional control mechanism in the other direction to cause the speed of the shaft to decrease,

first means for connecting the comparator greater than output signal to the second operating means,

second means for connecting the comparator less than output signal to the first operating means,

wherein the comparator examines the voltage signal with respect to the reference and the greater than output signal is actuated to cause the second operating means to decrease the speed of the shaft when the voltage signal indicates the shaft speed is greater than the desired speed and the less than output signal is actuated to cause the first operating means to increase the speed of the shaft when the voltage signal indicates the shaft speed is less than the desired speed, and

means for disabling the first and second operating means to thereby limit the time of operation of the first and second operating means.

4,375,610

WINDSHIELD WIPER DEVICE FOR AUTOMOBILES

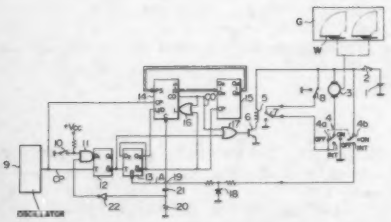
Mituru Nagaoka, and Sizuo Sumida, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Oct. 7, 1980, Ser. No. 194,919

Claims priority, application Japan, Oct. 8, 1979, 54-130668

Int. Cl.³ H02P *3/08*

U.S. Cl. 318—444 **4 Claims**



1. A windshield wiper device for an automobile comprising wiper blade means adapted for wiping engagement with a windshield, blade driving motor means for driving the wiper blade means, control circuit means for controlling the blade driving motor means and including a wiper switch for producing a first signal, a time interval setting switch for producing a second signal, an up-down counter which is able to count in two different directions, said up-down counter starting a count in a first one of said two different directions from a reference value upon receipt of said first signal and for stopping the count upon receipt of the second signal, a memory responsive to the second signal for memorizing the counted value in the up-down counter when the second signal is produced, said up-down counter receiving the counted value memorized in the memory as a set input and repeatedly counting in a second one of said two different directions from the counted value toward the reference value to produce a pulse signal each time the reference value is reached, and energizing means for receiving the pulse signal directly from the up-down counter, and responsive thereto for energizing the blade drive motor means to drive the wiper blade means.

4,375,611

PROTECTED SERVOMECHANISM

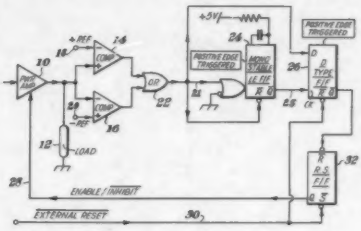
George H. Greig, Kirkcaldy, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed May 28, 1981, Ser. No. 267,315

Claims priority, application United Kingdom, Jun. 14, 1980, 8019533

Int. Cl.³ G05G *5/00*

U.S. Cl. 318—626 **10 Claims**



1. A positioning servomechanism comprising:

a power amplifier providing motive energy to a position-controller load movable along a path including an end-stop;

an inhibitor for causing said amplifier to cease providing said motive energy in response to a control input;

a monitor having the output level of said amplifier coupled as its output;

said monitor being operable to compare said output level against an upper limit and a lower limit, to provide an output indicative of said level having been outside said upper or lower limits for longer than a predetermined period said predetermined period being shorter than the time required for said load to acquire sufficient kinetic energy to destructively collide with said endstop, and to provide said output as said control input to said inhibitor, such that, upon receipt of said output from said monitor, said inhibitor causes said amplifier to cease providing said motive energy.

4,375,612

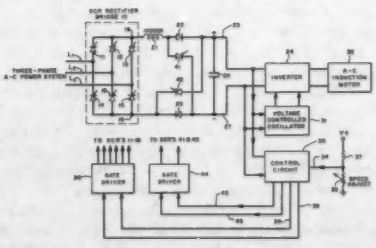
CONTROLLED REGENERATIVE D-C POWER SUPPLY

William F. Wirth, Slidell, La., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 75,306, Sep. 12, 1979, abandoned. This application Jun. 5, 1981, Ser. No. 270,740

Int. Cl.³ H02P *7/44*

U.S. Cl. 318—767 **6 Claims**



1. A controlled regenerative d-c power supply for convert-

ing a-c energy, received from an a-c power system, to d-c power for delivery to a load, where at times power flows in the reverse direction from the load and through the d-c power supply back to the a-c power system, comprising:

a phase-controlled rectifier bridge, having positive and negative output terminals, for changing a-c energy from the a-c power system to d-c power for translation to the load;

a filter circuit, including a series-connected filter choke and a shunt-connected capacitor, coupled between said bridge and the load to provide filtered d-c voltage for the load;

a switching network, interposed in said filter circuit between said choke and said capacitor, for effectively reversing the connections between said capacitor and the output terminals of said bridge to facilitate regeneration of power from the load and back into the a-c power system;

and control means for controlling said switching network to regulate the reverse power flow from the load to the a-c power system.

4,375,613

ELECTRICAL CONTROL CIRCUIT

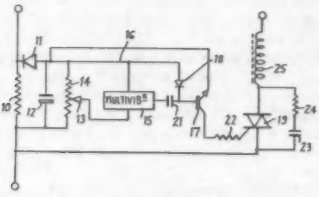
Paul Fuller, 29 Homeway, Harold Park, Romford, Essex, and Roderick W. Froud, 2 Wesley Ter., Chester-le-Street, County Durham, both of England

Continuation of Ser. No. 860,329, Dec. 14, 1977, abandoned. This application Jul. 26, 1979, Ser. No. 61,127

Claims priority, application United Kingdom, Dec. 14, 1976, 52039/76

Int. Cl.³ H02P *1/42, 1/44*

U.S. Cl. 318—786 **2 Claims**



1. In a circuit arrangement for use with electric motors having a start winding and a run winding and comprising

(a) sensing means having an output and operative to generate a control signal at said output in response to the flow of current in said run winding,

(b) threshold means responsive to said control signal to generate a firing signal in response to said control signal exceeding a predetermined threshold, and

(c) means connected to said threshold means so as to be responsive to said firing signal and operative to control the supply of current to said start winding,

the improvement wherein said threshold means comprises an MOS integrated circuit multivibrator operative to generate said firing signal as a pulse train, said output of said sensing means being connected to the supply inputs of said multivibrator whereby said threshold is defined by the inherent switching characteristics of said multivibrator.

4,375,614

VOLTAGE REGULATOR FOR DIRECT CURRENT POWER SUPPLY

William G. Steiner, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

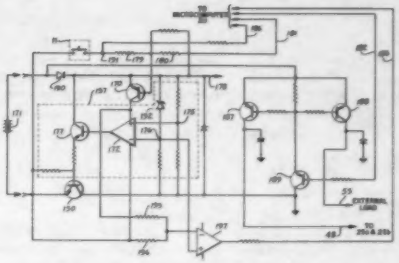
Division of Ser. No. 96,030, Nov. 20, 1979, Pat. No. 4,291,404. This application Apr. 6, 1981, Ser. No. 251,306

Int. Cl.³ G05F *1/56*

U.S. Cl. 323—280 **8 Claims**

1. In a regulator for a direct current power supply including an input port for accepting raw direct current, an output port for providing a regulated output voltage, the improvement of:

a series pass transistor having its emitter terminal connected to said input port and its collector terminal connected to said output port; error signal means for providing input to said series pass transistor, said input being a function of the difference between said output voltage and a predetermined reference voltage; said error signal means comprising a differential amplifier including a pair of supply terminals, one of said supply terminals being connected to one side of said input port and the other of said pair of supply terminals being connected to one side of said output port; and a switching means for controlling current to said pair of supply terminals.



4,375,615

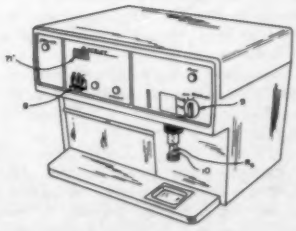
APPARATUS FOR COUNTING PARTICLES IN A LIQUID SUSPENSION

John L. Haynes, Redwood City, Calif., assignor to Becton Dickinson and Company, Paramus, N.J.

Continuation of Ser. No. 31,770, Apr. 20, 1979, Pat. No. 4,240,029, which is a continuation-in-part of Ser. No. 780,402, Mar. 23, 1977, Pat. No. 4,165,484. This application Jun. 2, 1980, Ser. No. 155,590

Int. Cl.³ G01N *27/00*

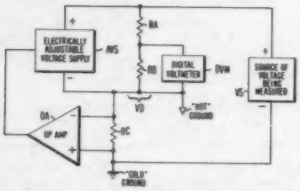
U.S. Cl. 324—71.4 **1 Claim**



1. Apparatus for counting particles comprising: transducer means through which said particles are passed to generate electrical pulses, the relative sizes of said particles being indicated by the magnitude of said electrical pulses and the number of said particles being indicated by the number of said electrical pulses, said particles having at least one limit of size distribution with an adjacent predetermined range of possible particle sizes where said particles do not normally occur; means for counting said electrical pulses to provide a particle count; first voltage reference means set at approximately the other end of said adjacent predetermined range relative to said one limit; second voltage reference means set at approximately said one limit of said particle size distribution; means for counting, concurrently with said particle count, said electrical pulses

between said first and second voltage references and comparing such count to said particle count.

4,375,616
NON-LOADING DIGITAL VOLTMETER
Scott C. Keller, Wrightsville, and Linus C. Ruth, Lancaster, both of Pa., assignors to RCA Corporation, New York, N.Y.
Filed Sep. 11, 1980, Ser. No. 186,339
Int. Cl.³ G01R 17/06, 17/00
U.S. Cl. 324—99 D 2 Claims



1. A substantially non-loading circuit for measuring voltages in a range with relatively high upper limit, comprising:

a voltmeter with an input circuit responsive to voltages applied to its input circuit to provide indications in digital form of that voltage, so long as those voltages are within a range with relatively low upper limit;

potential divider means for applying to the input circuit of said voltmeter a fraction of the potential appearing between first and second nodes, which potential divider means includes

a first resistance with a first end at said first node and with a second end, and which includes

a second resistance with a first end connected at the second end of said first resistance and with a second end connected at said second node, said second resistance connecting across the input circuit of said voltmeter;

means for applying the voltage to be measured between said first node and a third node;

current monitoring means connected for generating an electric control signal responsive to the polarity and amplitude of the flow of current between said second node and said third node; and

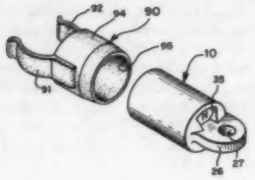
electrically adjustable voltage supply means applying its output voltage, the value of which is adjusted responsive to said electric control signal, between said first and second nodes in such poling that a feedback loop is completed which reduces the flow of current through the input circuit of said current monitoring means, said electrically adjustable voltage supply means including

a source of alternating-current voltage of relatively low amplitude controlled by said electric control signal, including

a step-up transformer having a primary winding to which said alternating-current voltage of relatively low amplitude is applied and having a secondary winding at which an alternating-current voltage of relatively high amplitude consequently appears, and including

a high voltage module for converting said relatively high amplitude alternating current voltage to a substantially direct voltage, the output voltage of said electrically adjustable voltage supply means.

4,375,617
FAULT INDICATOR WITH FLUX CONCENTRATING MEANS
Edmund O. Schweitzer, Jr., 1002 Dundee Rd., Northbrook, Ill. 60062
Filed Mar. 20, 1980, Ser. No. 132,141
Int. Cl.³ G01R 31/02, 19/14, 15/10
U.S. Cl. 324—133 6 Claims



1. In a fault indicator for mounting on the test point terminal of an electrical connector employed in a high-voltage system, wherein the connector includes a conductor embedded in an insulating layer, and wherein the test point terminal comprises a radially projecting portion of the insulating layer and an electrically conductive test point contact embedded in the projecting portion, the test point contact having an exposed portion at the outer end of the test point terminal, alternating current in the conductor capacitively inducing a proportional alternating current at the test point contact for powering the indicator, and of the type having

a hollow elongated cylinder shell having an open end adapted to engage the projecting insulation layer of the test point terminal, and

trip circuit means within said shell responsive to the alternating current at the test point terminal for providing an output indication upon the occurrence of a fault current in the conductor, said trip circuit means including magnetic sensing means which actuate in response to the magnetic field of a current at or above a first predetermined level in the conductor,

the improvement comprising:

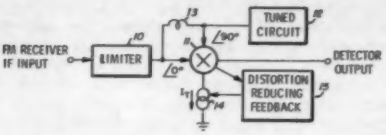
magnetic flux concentrating means comprising a pair of magnetic pole pieces, each extending at one end around, and being resiliently biased toward the other pole piece, to engage a portion of the circumference of the insulating layer, in a plane generally perpendicular to the conductor, and at the other end in parallel-spaced relationship in the direction of the projecting portion of the test point terminal to the magnetic sensing means; and

said magnetic flux concentrating means further comprising a cylindrical non-magnetic sleeve extending between said projecting portions of said pole pieces in coaxial engagement with said shell, said sleeve portion having an inside diameter generally corresponding to the outside diameter of said shell, whereby said sleeve and said pole pieces are fixedly positioned relative to said shell and said magnetic sensing means, for concentrating the magnetic field developed at said magnetic sensing means by current in the conductor whereby said magnetic sensing means actuate in response to current in the conductor at or above a second predetermined level lower than said first predetermined level.

4,375,618
LINEARIZED FM QUADRATURE DETECTOR
William B. Jett, Jr., San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Feb. 2, 1981, Ser. No. 230,197
Int. Cl.³ H03D 3/14, 3/26
U.S. Cl. 329—103 10 Claims

1. In an FM detector comprising a multiplier having input signal means, output signal means, current control means and

means for coupling said multiplier to a source of signal in phase quadrature with with the signal coupled to said input signal means, the improvement comprising:



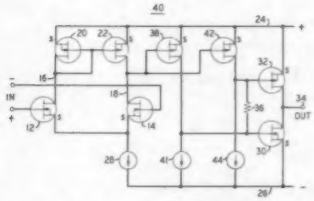
means for varying the current in said current control means so tha the current in said multiplier increases as the input signal coupled to said input signal means deviates from its center frequency whereby the linearity of said detector is increased.

4,375,619

FET OPERATIONAL AMPLIFIER WITH INCREASED OUTPUT SWING

Veikko R. Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 26, 1980, Ser. No. 163,186
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—253 **5 Claims**



1. An operational amplifier having first and second power supply nodes for supplying power to first and second stages, said first stage having first and second output nodes coupled to said second stage, said second stage comprising a complementary pair of first and second field effect transistors connected in series between said supply nodes with their drain terminals connected together at an output node of said second stage and their gates connected together through a first resistor, said amplifier being characterized by:

a third transistor having its gate connected to one of said output nodes, its source connected to said first power supply node, and its drain connected to the gate of said first transistor;

a bias current means connected between said gate of said first transistor and said second power supply node, and

a fourth transistor having its gate connected to said second output node, its source connected to said first power supply node, and its drain connected to the gate of said second transistor.

4,375,620

PSEUDO-ATMOSPHERIC NOISE GENERATOR WITH CONTROL OF TEMPORAL CHARACTERISTICS

Paul A. Singer, Santee, and Roger K. Cernius, El Cajon, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 15, 1980, Ser. No. 216,715
Int. Cl.³ H03B *29/00*
U.S. Cl. 331—78 **10 Claims**

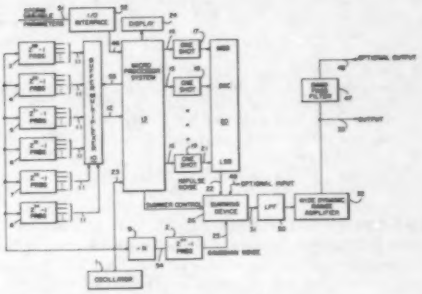
1. An improved pseudo-atmospheric noise generator for producing noise in the VLF/LF spectrum with known amplitude probability distributions while controlling the temporal characteristics of the impulses comprising:

a plurality of pseudo-random bit generators having amplitude probability distribution outputs;

means coupled to receive the outputs from the pseudo-random bit generators for storing and selecting the outputs from the pseudo-random bit generators;

means coupled to the storing and selecting means for providing distribution of bursts of pulses representative of geographical temporal probability distributions for regional storms;

means coupled to the distribution providing means for converting digital pulses to analog signals of the random amplitude and distribution as determined by the distribution providing means;



a Gaussian noise source; and

means coupled to the analog signal converting means and the Gaussian noise source for summing the Gaussian noise signals and the analog signals in a selective ratio to provide the desired pseudo-random atmospheric noise signal.

10. A method of creating a reference noise level signal for test purposes comprising:

attenuating a predetermined Gaussian noise pattern at a preselected amplitude;

passing the attenuated Gaussian noise pattern through a low pass filter and a wide dynamic range amplifier; and

feeding the resultant signal through a bandpass filter having a known equivalent noise band width so that the Gaussian noise then establishes for the user a simulated atmospheric noise RMS level.

4,375,621

CIRCUIT FOR LINEARIZING FREQUENCY MODULATED OSCILLATORS ON MICROSTRIP

Andres F. Schneiter, Maple Ridge, and Josef L. Fikart, Port Coquitlam, both of Canada, assignors to AEL Microtel, Ltd., Burnaby, Canada

Filed Mar. 2, 1981, Ser. No. 239,759
Int. Cl.³ H03B *5/18*; H03C *3/08, 3/22*
U.S. Cl. 332—16 T **4 Claims**

1. Apparatus for linearizing the modulation circuit in a frequency modulated oscillator, comprising:

a microstrip oscillator having a frequency determining resonator circuit and an output matching circuit;

a secondary resonator made up of a microstrip transmission line, having first and second ends, and having a length that is approximately equal to one quarter wavelength;

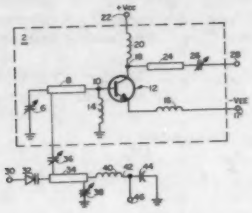
a source of DC bias voltage having first and second terminals, said second terminal being connected to the second end of said secondary resonator;

a source of modulting signals having first and second terminals, said second terminal being connected to ground;

a varactor diode having one terminal end thereof connected to the first terminal of said DC bias voltage and modulat-

ing signal sources, and having the other terminal end connected to said first end of said resonator;

a first variable capacitor having one side connected to said first end of said secondary resonator, having the other side connected to said frequency determining resonator circuit, whereby the deviation sensitivity of said oscillator is controlled; and



a variable reactor having one side connected to the second end of said secondary resonator, whereby the impedance of the combination of said secondary resonator and said variable reactor may be varied to linearize said frequency modulated oscillator.

4,375,622

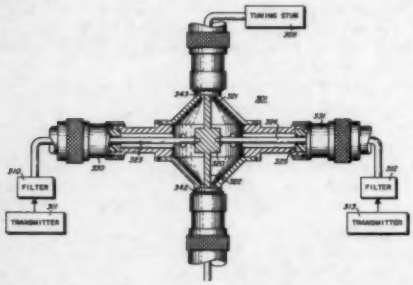
MULTIPORT RADIO FREQUENCY SIGNAL COMBINER

Allen H. Hollingsworth, and Alan G. Deutschle, both of Hoffman Estates, Ill., assignors to Motorola, Inc.

Filed Apr. 20, 1981, Ser. No. 255,408

Int. Cl.³ H01P 5/12

U.S. Cl. 333—126 **23 Claims**



1. Apparatus for combining at least three radio frequency signals, having different predetermined frequencies and being generated by separate signal sources, to provide a composite output signal, comprising:

a plurality of input transmission line means each having a signal conductor and a predetermined characteristic impedance, disposed in the same plane with one another and coupled to a corresponding one of the radio frequency signals;

output transmission line means having a signal conductor and a predetermined characteristic impedance and providing the composite output signal;

a terminating element for commonly interconnecting at substantially a single point the signal conductors of the input transmission line means and the signal conductor of the output transmission line means and combining the radio frequency signals on the signal conductors of the input transmission line means to provide the composite output signal on the signal conductor of the output transmission line means, each of the signal conductors of the input transmission line means radially connected to the terminating element, and the signal conductor of the output transmission line means disposed perpendicular to the plane of the signal conductors of the input transmission line means; and

tuning transmission line means having a signal conductor and a predetermined characteristic impedance and being terminated by a predetermined impedance, the signal conductor of the tuning transmission line means connected to the terminating element substantially at the single interconnection point for substantially eliminating the effects of the capacitive discontinuity created at the interconnection point.

4,375,623

ARRANGEMENT FOR THE TRANSMISSION OF AUDIO SIGNALS

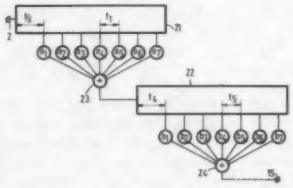
Nico V. Franssen, deceased, late of Knegsel, Netherlands; by Friedrich J. de Haan, administrator, Dommelen, Netherlands; Kornelis A. Immink, Eindhoven, Netherlands; Else C. Dijkmans, Eindhoven, Netherlands, and Mathias H. Geelen, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,309

Claims priority, application Netherlands, Feb. 25, 1980, 8001118

Int. Cl.³ H03H 7/18, 7/30

U.S. Cl. 333—138 **23 Claims**

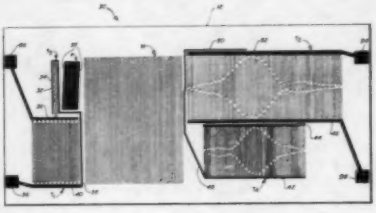


1. An arrangement for the transmission of audio signals comprising, at least one delay line provided with an input, an output and $(2k+1)$ tappings (k being an integer and $2 \leqq k \leqq 4$), said tappings being situated at equal time intervals (t_1) and each connected to a common adding circuit via a first amplitude control device, the first amplitude control devices being connected to tappings situated symmetrically realtive to a central tapping so that the output signals of said first amplitude control devices have equal amplitude values and the phase shifts in the first amplitude control devices are the same, but the phase shift in one of every two of said first amplitude control devices situated at equal odd multiples of the time interval (t_1) from the central tapping differ by 180° from that in the other and the amplitudes of said signals are selected so that the transmission by the arrangement is at least substantially frequency-independent, characterized in that when an index x (x being an integer $\leqq k+1$) is assigned to a number of tappings of the delay line with the index 1 being assigned to one of the extreme tappings, and consecutive indices being assigned to consecutive adjacent tappings, proceeding from said extreme tapping to the central tapping, with the highest index assigned to the central tapping, the ratios between the output signals of the amplitude control devices A_x associated with said tappings, including their signs, satisfy the equation $A_1:A_2:A_3:A_4:A_5 = 1:2n:2n^2:n^3-n:\frac{1}{2}(n^4=1)-2n^2$.

4,375,624
SURFACE WAVE ACOUSTIC DEVICE WITH COMPENSATION FOR SPURIOUS FREQUENCY RESPONSE MODES

Adrian J. DeVries, Kennewick, Wash., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jun. 22, 1981, Ser. No. 276,140
Int. Cl.³ H03H 9/42, 9/64
U.S. Cl. 333—194 24 Claims



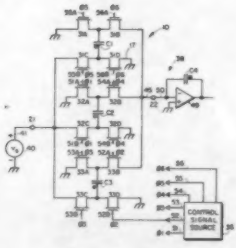
1. In a surface acoustic wave device of the type having a primary surface acoustic signal channel in which information is carried both by a primary wave and a spurious wave, the frequency response of said primary channel to said primary wave being substantially different from its frequency response to said spurious wave; the improvement comprising:

an auxiliary surface acoustic signal channel which is in parallel with said primary channel and which is adapted to have a frequency response substantially similar to that of said primary channel to said spurious wave, and arranged to produce an output substantially out of phase therewith whereby to compensate said primary channel for said spurious wave response.

4,375,625
SWITCHED-CAPACITOR SOURCE RESISTOR SIMULATION CIRCUIT

Man S. Lee, San Mateo, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed May 21, 1981, Ser. No. 265,882
Int. Cl.³ H03H 11/40
U.S. Cl. 333—213 14 Claims



1. An integratable switched capacitor circuit for simulating a source resistor comprising:

a first node for electrical connection to the output terminal of a voltage souce that is associated with a ground reference potential;

a second node for connection to a virtual ground potential;

first and second capacitor means C1 and C2, each having a pair of terminals;

first switch means periodically operative in first and second non-overlapping switch states for periodically electrically connecting one and other terminals of C1 to ground and said first node, respectively, and electrically connecting said one and other terminals of C1 to said second node and ground, respectively, for charging C1 with the source voltage and discharging C1 into the second node, respectively; said first switch means being operative in each of said first and second switch states once during each T second time interval, where T is the difference between times of termination of adjacent first switch states and f=1/T is the sampling frequency for C1; and

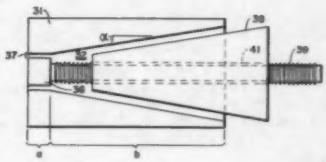
second switch means being periodically operative in third and fourth non-overlapping switch states for periodically connecting one and other terminals of C2 to ground and said first node, respectively, and electrically connecting said one and other terminals of C2 to said second node and ground, respectively, for charging C2 with the source voltage and discharging C2 into the second node, respectively; said second switch means being operative for terminating a third switch state at a first time which causes C2 to sample the voltage at said first node, for causing C2 to hold the sampled voltage, and for subsequently operating in a fourth state for discharging C2;

said circuit simulating a source resistor across said nodes when said first node is connected to the output terminal of a voltage source.

4,375,626
PRECISION LINEAR TUNING CIRCUIT

John J. Hudak, Columbia, Md., assignor to The United States of America as represented by the National Security Agency, Washington, D.C.

Filed Jun. 22, 1981, Ser. No. 276,143
Int. Cl.³ H03J 3/20
U.S. Cl. 334—79 5 Claims



1. An electrical circuit wherein tuning is achieved by varying circuit capacitance comprising:

a variable capacitor, comprising:

a first electrode fixed on an axis;

a second electrode fixed concentrically about said first electrode such that the facing walls of the electrodes define a gap therebetween, and

a dielectric movably positioned concentrically within the gap between said first and second electrodes, the facing walls of one electrode and the dielectric being tapered relative to said axis and the facing walls of the other electrode and the dielectric being untapered relative to said axis, and

a fixed capacitor electrically connected in parallel with said variable capacitor.

4,375,627
TRANSFORMER TANK PANEL NEUTRAL CONNECTION WITH REVERSE CURRENT SHIELDING CONDUCTORS

Irvin L. Hansen, and Randall W. Haack, both of Muncie, Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 26, 1981, Ser. No. 277,589
Int. Cl.³ H01F 33/00, 15/04
U.S. Cl. 336—5 4 Claims

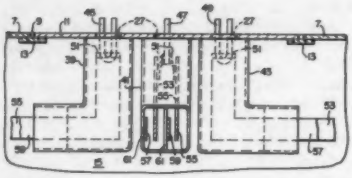
1. An electric transformer comprising:

a transformer structure having a coil-core assembly,

a tank casing enclosing the assembly and having an opening therein,

a conducting panel for closing the opening,

dielectric means between the panel and casing for holding the panel in place,
the panel having an aperture,
a conductive tubular structure mounted on and extending inwardly from the inside surface of the panel,
the structure surrounding the aperture,
conductor means extending from the coil-core assembly and



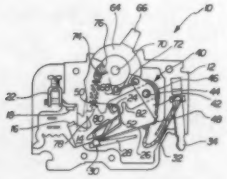
through the tubular structure and aperture and including first and second conductors of opposite polarities,
the first conductor being connected to the tubular structure,
the second conductor extending through the tubular structure and the aperture,
whereby a current passing through the panel reduces eddy current loss and heating of the tank casing associated therewith.

4,375,628

CIRCUIT BREAKER

James H. Leonard, Albemarle, N.C., assignor to Federal Pacific Electric Company, Newark, N.J.

Filed Oct. 9, 1981, Ser. No. 310,086
Int. Cl.[3] H01H *71/16*
U.S. Cl. 337—75 7 Claims



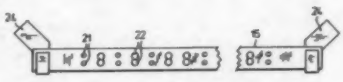
1. In an automatic circuit breaker having an elongated movable contact arm carrying a movable contact, a companion contact engageable by said movable contact for closing a circuit, a current responsive latch carried by said movable contact arm, actuator means pivotally mounted on said movable contact arm and operatively connected to said contact arm under control of said latch for closing said circuit breaker, said contact arm having an aperture intermediate the movable contact and said actuator means, a contact member pivot extending through said aperture to support said contact arm, first spring means for biasing said movable contact away from said companion contact, and toggle means for operating said circuit breaker to engage and disengage said movable and companion contacts, the improvement comprising: said aperture providing limited movement of said contact arm transverse to said contact member pivot, and second spring means for biasing said contact arm to one extreme of said movement transverse to said contact member pivot, said second spring means positioned between said latch and said contact member.

4,375,629

FUSE WITH ALUMINUM FUSE ELEMENT HAVING TIN-PLATED COPPER TERMINALS

John F. Howard, Peterborough, Canada, assignor to Canadian General Electric Co., Ltd., Toronto, Canada

Filed Jun. 26, 1981, Ser. No. 277,544
Claims priority, application Canada, Oct. 16, 1980, 362558
Int. Cl.[3] H01H *85/10*
U.S. Cl. 337—159 4 Claims



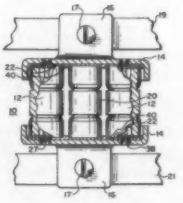
1. A fuse element for a current limiting fuse, comprising:
a ribbon of aluminum or aluminum alloy, and
a terminal at each end of said ribbon of copper sheet material having at least a portion thereof tin plated, said portion being bent over a respective end of said ribbon with the tin plated surface thereof contacting both sides of said respective end and being welded to said end,
said portion of each said terminal being welded to said respective end by at least one spot weld forming a welded portion between said respective end and the respective portion on either side of said end,
said ribbon having spaced along the length thereof a plurality of pairs of larger and smaller holes, each of said pairs of larger holes being defined by edges which are closely adjacent at the centerline of said ribbon,
the pairs of smaller and larger holes alternating along the length of the ribbon.

4,375,630

MULTIPLE ELEMENT CURRENT LIMITING FUSE

Aldino J. Gaia, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Apr. 1, 1981, Ser. No. 250,096
Int. Cl.[3] H01H *37/04*
U.S. Cl. 337—248 8 Claims



1. A multiple element, current-limiting fuse comprising:
at least two spaced-apart metallic end bells each having an interior surface and means for connection to an external electrical circuit;
a plurality of fusible elements disposed between said end bells and connected to said interior surfaces thereof by means of a heat softenable alloy;
fastener means disposed between said end bells, said fastener means including a central body formed of electrical insulative material, said body having first and second ends, and first and second metallic ferrules connected to said first and second ends of said central insulative body, respectively;
and connecting means for mechanically coupling said ferrules to said end bells, said fastener means securing said end bells in fixed spaced-apart relationship even upon the application of opposing forces to said end bells in the

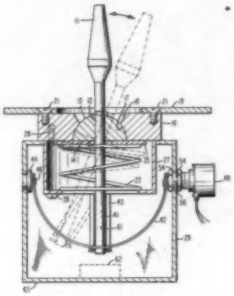
presence of an elevated temperature sufficient to weaken said heat softenable alloy, said connecting means includes studs and said end bells define apertures dimensioned for receipt of said studs.

4,375,631

JOYSTICK CONTROL

Thomas R. Goldberg, Golden, Colo., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 9, 1981, Ser. No. 252,710
Int. Cl.³ H01C 10/16
U.S. Cl. 338—128 7 Claims



1. A joystick control of the type having a base and universal joint means including bearing and journal members, with the joystick attached to one of said members for universal pivoting motion with respect to said base for manual positioning in a range of desired inclinations in at least two orthogonal planes, and bail and signal means positionable by pivoting of said joystick to indicate the joystick inclinations in at least said two orthogonal planes, characterized in that:

said universal joint means is comprised by only one single bearing member and only one single journal member presenting mating faces substantially conforming to at least portions of a predetermined spherical surface;

said one member to which said joystick is attached presents at least one other face intersecting said spherically surfaced face thereof;

springy tilting displacement means are provided for engaging said other face for tilting displacement by said joystick when the joystick is manually pivoted from corresponding neutral positions to corresponding displaced positions, respectively;

said springy displacement means including at least one spring mounted directly on said base, said spring being biassed toward said neutral position thereof, and being coupled to said joystick for concomittant return of the joystick to the neutral position thereof when the joystick is released from manual constraint.

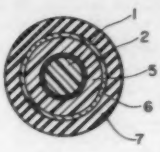
4,375,632

IGNITION CABLES

Yoshimi Miyamoto, Kariya; Keiichi Kojima, and Yasuo Toriumi, both of Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippondenso Co., Ltd., Aichi, both of, Japan

Filed Feb. 2, 1981, Ser. No. 230,932
Claims priority, application Japan, Jan. 31, 1980, 55-10873
Int. Cl.³ H01C 3/06
U.S. Cl. 338—214 6 Claims

1. A high voltage ignition cable comprising in order an innermost resistive-conductor core, an insulator layer, and a jacket, wherein the resistive-conductor core comprises a tension member having thereon, in order, a semiconductive internal layer and a semiconductive external layer, wherein a con-



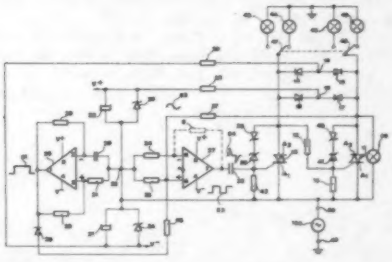
ductive stripping layer is interposed between the semiconductive internal layer and the semiconductive external layer.

4,375,633

CONTROL CIRCUIT FOR DIRECTION INDICATOR LAMPS IN VEHICLES WITH ALTERNATING CURRENT INSTALLATIONS

Fausto Bazzani, Spilamberto, and Paolo Sevini, Bologna, both of Italy, assignors to Zanussi Elettromeccanica S.p.A., Pordenone, Italy

Filed Mar. 9, 1981, Ser. No. 241,844
Claims priority, application Italy, Mar. 17, 1980, 45707 A/80
Int. Cl.³ B60Q 1/38
U.S. Cl. 340—73 12 Claims



1. A control circuit for use in controlling direction indicator lamps of a vehicle of the type including an alternating voltage generator for generating an alternating voltage, a switch means for selective manual connection to selected direction indicator lamps, and at least one bi-directional conduction controlled diode having a control electrode and positioned between said alternating voltage generator and said switch means to feed an alternating voltage to said direction indicator lamps selected by the switch means, said control circuit comprising:

an impulse stage generator means, having an output connected to said control electrode of said diode and supplied with said alternating voltage from said alternating voltage generator, for producing an output signal of alternating current impulses which are synchronized with zero changeover points of said alternating voltage and for supplying said output signal to said control electrode; and

a timing stage means, having an output connected to said impulse stage generator means, for generating a timing signal of alternating blocking and admitting impulses and for supplying said timing signal to said impulse stage generator means to control the operation thereof.

4,375,634

WARNING LIGHT

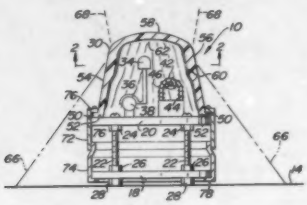
Harvey Leis, 3050 North Hope St., Philadelphia, Pa. 19133

Filed May 17, 1979, Ser. No. 39,949
Int. Cl.³ B60Q 1/46
U.S. Cl. 340—81 R 4 Claims

1. In a warning light device of the type comprising first and second light sources mounted on a base with a translucent

generally dome-shaped lens overlying said light sources and being supported by said base and means for energizing said first and second light sources, the improvement comprising

means for flashing said first light so that a second flash is initiated before the light from a first flash is extinguished



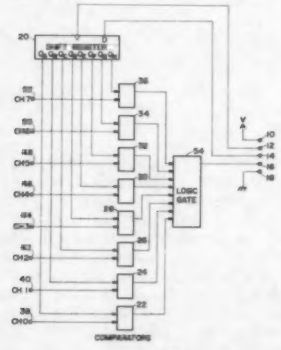
so that said first light source provides a continuous beam of light of variable intensity to continuously illuminate the area around said warning light, and means for causing said second light source to provide an intermittent beam of light.

4,375,635

SIGNAL MEASUREMENT APPARATUS

Chon H. Leow, Portland, Oreg., and Toshihisa Nagai, Tokyo, Japan, assignors to Tektronix, Inc., Beaverton, Oreg.

Filed May 12, 1980, Ser. No. 148,643
Claims priority, application Japan, May 23, 1979, 54/63746
Int. Cl.³ G06F *11/00*; H03K *5/19*
U.S. Cl. 340—146.3 Q **15 Claims**



1. A signal measurement apparatus for measuring an input signal in response to a selected logic combination of n-channel parallel logic input signals, comprising:

a mainframe for receiving said input signal to be measured, said mainframe including a clock generator for generating a clock signal and means for generating a single serial logic signal consisting of n bits in synchronism with said clock signal to set said logic combination; and

a subframe including serial input-parallel output type logic memory means and comparison means; said memory means receiving said clock signal and said serial logic signal from said mainframe for converting said serial logic signal into an n-bit parallel logic signal; said comparison means comparing said n-bit parallel logic signal from said memory means with said n-channel parallel logic input signals and generating an output signal when a combination of said n-channel parallel logic input signals corresponds to said logic combination set by said mainframe;

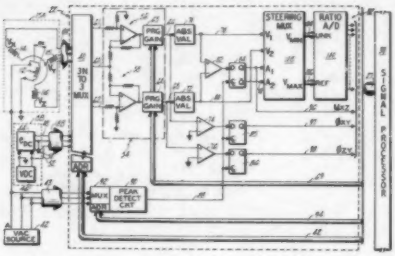
wherein said output signal from said comparison means is supplied to said mainframe for controlling the operation of said mainframe.

4,375,636

AC SYNCHRO SIGNAL TO DIGITAL SIGNAL CONVERTER

Timothy F. Stack, and George T. Shoemaker, both of Enfield, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 158,860, Jun. 12, 1980, Pat. No. 4,340,881.
This application Dec. 17, 1981, Ser. No. 331,852
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 SY **2 Claims**



1. An AC synchro-to-digital converter for providing synchro angle values from received sensed signals representative of the actual voltage magnitudes of each of the three AC synchro stator windings and the rotor winding, comprising:

analog-to-digital (A/D) signal interface, including differential amplifier means responsive to the actual stator winding voltage signals for providing difference stator winding signals representative of the difference voltage magnitude between a selected one of the stator windings and each of the remaining two, absolute value circuit means responsive to said difference stator winding signals for providing absolute value signals representative of each, and peak signal detection means responsive to the actual rotor winding voltage signal for providing a reference pulse signal in the presence of each of a selected polarity rotor peak voltage signal value, said A/D interface further including signal conversion means responsive to said difference stator winding signals, said absolute value signals, and said reference pulse signals, for providing in the presence of each reference pulse signal,

a digital ratio signal representing the magnitude ratio of the smaller magnitude difference stator winding signal divided by the larger magnitude difference stator winding signal,

digital difference magnitude signals representing each of said difference stator winding signal magnitudes, and

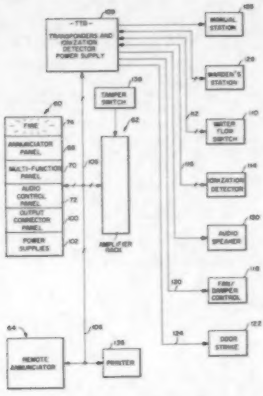
digital phase signals representing the relative phase between each of said remaining stator winding sensed voltage signals and the sensed rotor voltage signal; and

signal processing means, responsive to said digital ratio signal, said digital phase signals, and said digital difference magnitude signals, and including memory means for storing a plurality of identification signals associated with different subranges of synchro angle values within a total range of synchro travel, each identification signal defined as a combination of said digital difference magnitude signal and said digital phase signal value and each identifying a particular synchro angle value within its associated subrange in combination with said digital ratio signal value, said processing means providing actual synchro angle values in dependence on the value of said digital ratio signal in the presence of a particular sub-range defined by said digital difference magnitude and said digital phase signal values.

4,375,637
INTEGRATED ALARM, SECURITY, BUILDING MANAGEMENT, AND COMMUNICATIONS SYSTEM

Paul A. Desjardins, Commack, N.Y., assignor to Firecom, Inc., Woodside, N.Y.

Filed Feb. 24, 1981, Ser. No. 237,801
Int. Cl.³ G08B 29/00, 23/00
U.S. Cl. 340—517 17 Claims



1. A building alarm, communication, and operating system, comprising:

a centrally located control unit;

a plurality of sensing units each having an individual address and being located remotely from said centrally located control unit;

a plurality of operating devices each having an individual address and being located remotely from said centrally located control unit;

said control unit including a clock means producing a clock signal and a synch signal generating means for producing a synch signal from said clock signal;

a first conductor connecting said clock means to a plurality of convertor and decoder means remotely located with each of said plurality of sensing units and said plurality of operating devices for continuously feeding said clock signal thereto;

a second conductor connecting said synch signal generating means to each of said plurality of convertor and decoder means for feeding said synch signal thereto;

each of said plurality of convertor and decoder means containing an address unique to one of said sensing units and operating devices;

a third conductor connecting each of said plurality of sensing units to said control unit for feeding a monitoring signal from said sensing units to said control unit;

a plurality of loudspeakers being located remotely from and electrically connected to said centrally located control unit;

communication means connected to said plurality of loudspeakers and said control unit for permitting bidirectional communication between said plurality of loudspeakers and said centrally located control unit;

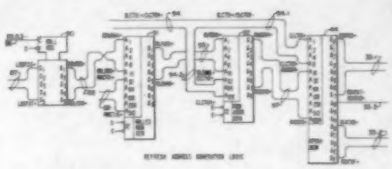
display means electrically connected to said centrally located control unit and connected to receive said monitoring signal from said plurality of sensing units for indicating whether any sensing device has sensed an emergency condition; and

command means connected to receive said clock signal for producing an actuation command signal fed on a fourth conductor to said plurality of remote operating devices for causing selected ones of said operating devices to perform a work function, whereby personnel at said centrally located control unit can communicate with remote locations and can be informed of various conditions detected by said sensing devices.

4,375,638
SCROLLING DISPLAY REFRESH MEMORY ADDRESS GENERATION APPARATUS

David B. O'Keefe, Westford, and Robert C. Miller, Braintree, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 16, 1980, Ser. No. 159,719
Int. Cl.³ G09G 1/16
U.S. Cl. 340—726 9 Claims



1. A refresh memory address generation apparatus in a display controller for accommodating the scrolling of rows of display information stored in fixed length rows within a refresh memory of said display controller, wherein said display controller includes faster scan logic having a column counter for holding a column value and row counter for holding a row value, said column value and said row value corresponding to the column and row of video information being refreshed on a display screen coupled to said display controller, said fixed length rows within said refresh memory containing a unit of video data for each column of video information displayable on said display screen, said refresh memory address generation apparatus comprising:

a. a roll register for holding a roll value indicative of the number of rows said video information is to be scrolled on said display screen;

b. first means, coupled to said roll register and said row counter, for adding said roll value to said row value to produce a relocated row value;

c. second means, coupled to said first means and said column counter, for multiplying said relocated row value by the number of video data units in each of said fixed length rows and adding to said product the column value to produce a relocated cell address in said refresh memory indicative of the address a unit of video data within said refresh memory corresponding to a cell of video information to be refreshed as determined by the intersection of said row value and said column value on said display screen, thereby accommodating the scrolling of rows of video information on said display screen without reconstructing said video information stored in said refresh memory;

wherein said first means is a first precoded memory, said first precoded memory addressed by using signals from said roll register indicative of said roll value and also addressed by using signals from said row counter indicative of said row value to retrieve first data words, and wherein each of said first data words is coded to contain the sum of said roll value plus the row value taken modulo the number of scrollable information rows displayable on said display screen thereby producing said relocated row value; and

wherein said second means is a second precoded memory, said second precoded memory addressed by using signals from said first data words retrieved from said first precoded memory and also addressed by signals from said column counter indicative of said column value to retrieve second data words, and wherein each of said second data words is coded to contain the product of said relocated row value times the number of said units of video data

contained in each of said fixed length rows within said refresh memory thereby producing said relocated cell address.

4,375,639

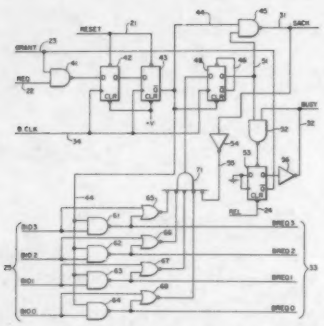
SYNCHRONOUS BUS ARBITER

Mize Johnson, Jr., West Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 12, 1981, Ser. No. 224,070

Int. Cl.³ H04Q 9/00

U.S. Cl. 340—825.5 **26 Claims**



1. For use in a data communication system wherein a plurality of master devices communicate over a common bus, a priority resolution circuit associated with each master device for resolving priority among the master devices, when more than one is seeking access to the bus, comprising:

first means for receiving a master identification code from its associated master device representative of the priority of said associated master device relative to the other master devices that are coupled to the bus;

second means, coupled to each master device among said plurality of master devices, for selectively coupling a first code, defined in accordance with said master identification code received by said first means, to said plurality of master devices;

third means, responsive to a request for access to said bus by said associated master device, for causing said second means to couple said first code to said plurality of master devices; and

fourth means, coupled to said second means, for selectively enabling said associated master device to gain access to said bus in response to the master identification code of said associated master device having the highest priority with respect to the identification code of any other master whose first code has been selectively coupled to each of said plurality of master devices.

4,375,640

RADAR SYSTEMS

Denis H. Harvey, Newport, England, assignor to Plessey Handel Und Investments AG, Garternstrasse, Switzerland

Filed Mar. 10, 1980, Ser. No. 128,457

Claims priority, application United Kingdom, Mar. 10, 1979, 7908520

Int. Cl.³ G01S 13/52

U.S. Cl. 343—5 NQ **10 Claims**

1. A radar system for the detection of non-clutter type moving targets, comprising:

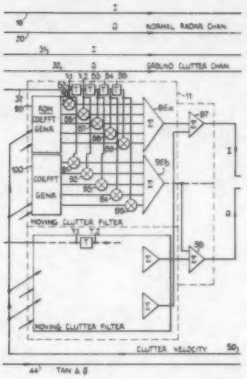
velocity estimator means for producing sequentially, in respect of received radar return signals from objects detected during each complete angular scan, corresponding signals indicative of the velocity of the objects;

averager means responsive to the corresponding signals from the velocity estimator means for providing data appertaining to the average value, over a plurality of angular scans, of the velocity of detected objects;

main store means having a plurality of storage addresses for receiving and storing the data appertaining to the average value of the velocity of said detected objects as sensed at instants in time corresponding to a corresponding number of range/bearing cells, one cell to each address;

moving clutter filter means for receiving radar return signals, having a frequency passband which can be varied in response to control signals, and having an output line; and

control signal producing means for producing control signals for setting the frequency passband of the moving clutter filter means, in dependence upon the data stored in the main store means, to a frequency which reflects an average clutter velocity sensed in a cell during said plurality of scans so that, for the reception of radar return signals in a specified range/bearing cell, the frequency of the moving clutter filter means is set to pass to the output line only those signals having a frequency which corresponds to a velocity which is different from the average clutter velocity sensed in that cell during said plurality of scans, and which could therefore be indicative of a non-clutter type moving target.



4,375,641

METHOD IN A TRACKING RADAR TO ATTAIN A LARGE UNAMBIGUOUS RANGE FOR DETECTED TARGETS BY MEANS OF RADAR PULSES WITH HIGH REPETITION FREQUENCY

Lars G. Josefsson, Lindome; Karl-Erik I. Oderland, and Jan-Olov Winnberg, both of Mölndal, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE80/00122, § 371 Date Dec. 25, 1980, § 102(e) Date Dec. 23, 1980, PCT Pub. No. WO80/02325, PCT Pub. Date Oct. 30, 1980

PCT Filed Apr. 23, 1980, Ser. No. 227,081

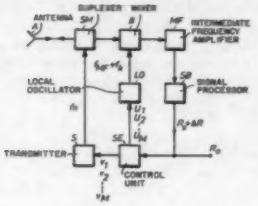
Claims priority, application Sweden, Apr. 25, 1979, 7903653

Int. Cl.³ G01S 13/24

U.S. Cl. 343—17.2 R **2 Claims**

1. A method in a tracking radar for achieving a large unambiguous range for a detected target in which radar pulses are transmitted in series with a certain high pulse repetition frequency (f_{PRF}), a certain pulse length (τ) and a certain listening interval (t-τ) between two subsequent pulses, the carrier frequency varying from one pulse to the next following in one and the same series, but reappearing in the same order from one series to the next so that for a certain series a total of M frequencies appear, where the number M is chosen so that $M.t_m \geq 1/f_{PRF}$ and where t_m is the smallest value of the listening interval (t-τ) and f_{PRF} is the frequency with which the pulse series are repeated, comprising (a) measuring the detected

target range with an accuracy corresponding to at least half of a listening interval $(t-\tau)$ to obtain a certain initial value R_{ϕ}; (b) choosing a certain value of the frequency repetition frequency f_{FRF} so that the condition $c/2\ f_{FRF} > R_{\phi}$ is fulfilled where C is the speed of light; (c) after one or more pulse series have been transmitted and the corresponding target echo pulses belonging to a certain series have been received, making a new measurement of the target range so that a new value R_1 is obtained; (d) if the measured distance $R1 < Rk$ where Rk is the highest value for which $c/2f_{FRF} > Rk$ being valid, a new series with the same number M frequencies and the same order as previously being transmitted, while if $R_1 > Rk$, a new pulse series with a greater number $M_1 > M$ frequencies corresponding to a lower value on the frequency f_{FRF} being transmitted.



4,375,642

ROD ANTENNA, PARTICULARLY FOR MOBILE FM SIGNAL TRANSDUCING APPLICATIONS

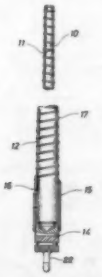
Horst Dörrie, and Kurt Klinkwitz, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,696

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036084

Int. Cl.³ H01Q *1/36*

U.S. Cl. 343—895 **11 Claims**



1. Rod antenna for transducing radio signals, particularly for mobile frequency modulation (FM) reception having

a support rod (10) of insulating material,

and comprising

a first, spiral winding (11) wound and spirally progressing on a first longitudinal portion (b) of the rod;

a second winding (12) wound and spirally progressing on an adjacent second portion (a) of the rod,

the winding sense and spiral progression of said second winding being opposite to that of said first winding, and said windings being connected at the adjacent ends at an intermediate location along the length of the rod;

an electrical connection element (14, 22; 20, 26) electrically connected to the free end (16) of one (12) of said windings;

wherein the sum of the lengths of the rod of the first and second portions over which said windings extend (a+b) is about ¼ of the median wave length of the radio signals to be transduced;

and wherein the extended wire length of the respective first and second windings (11, 12), each, is about ¼ of the median wave length of the signals to be transduced.

4,375,643

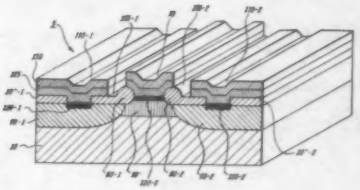
APPLICATION OF GROWN OXIDE BUMPER INSULATORS TO A HIGH-SPEED VLSI SASMESFET

Keming W. Yeh, Los Angeles, and Izya Bol, Hawthorne, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 14, 1980, Ser. No. 121,622

Int. Cl.³ H01L *21/265, 29/56*

U.S. Cl. 357—15 **3 Claims**



1. A high speed Schottky barrier field effect transistor, with low series resistance, comprising:

a substrate of one conductivity type;

a source region heavily doped to the other conductivity type;

a drain region heavily doped to the other conductivity type;

a channel region separating said source region and said drain region;

Schottky barrier gate means forming a rectifying junction with a portion of said channel, said gate means providing, when properly biased, control of the current flow between said source region and said drain region; and

an oxide layer with (1) first portions thereof covering portions of the external surface of said source and drain regions and (2) other portions thereof covering the portions of said channel between said source region and said barrier gate and between said drain region and said barrier gate, cross-sections of said other portions of said oxide layer having height and thickness dimensions greater than the thickness of said first portions of said oxide layer due to favored oxide growth at the edges of said barrier gate, whereby source-to-gate and gate-to-drain resistances are low which permit the transistor to operate at high frequencies.

4,375,644

PHOTOELECTRIC ELEMENT, PICTURE-READING DEVICE INCLUDING THE SAME, AND PROCESS FOR PRODUCTION THEREOF

Kouji Mori, Yokohama; Hideo Segawa, Ooji; Kouichi Sakurai, and Masanori Itagaki, both of Kawasaki, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,138

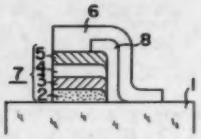
Claims priority, application Japan, Nov. 30, 1979, 54-155267; Dec. 3, 1979, 54-156524; Dec. 19, 1979, 54-165162; Dec. 24, 1979, 54-166796

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 **17 Claims**

1. A photoelectric element comprising: (I) a transparent electroconductive film; (II) a first film of II-VI compound

having a relatively large band gap; (III) a second film of II-VI compound having a band gap smaller than that of the first film;



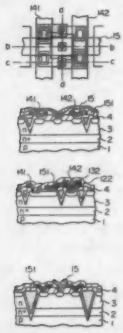
and (IV) an amorphous chalcogenide film, said films (I) through (IV) being successively deposited in the order named.

4,375,645

SEMICONDUCTOR DEVICE AND A METHOD OF PRODUCING THE SAME

Tsuneo Funatsu, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 19, 1979, Ser. No. 105,152
Claims priority, application Japan, Dec. 30, 1978, 53-165804
Int. Cl.³ H01L *27/04*; G11C *11/40*; H03K *19/091*
U.S. Cl. 357—50 **15 Claims**



1. A semiconductor memory device having plural elementary regions on a semiconductor substrate selectively isolated by V-shaped grooves, said semiconductor device comprising

a first semiconductor layer of a first conductivity type formed over said substrate,

an insulating layer selectively covering the surface of said first semiconductor layer, with predetermined portions of said insulating layer being enlarged in thickness, and respective ones of said predetermined portions essentially surrounding a central portion of each said elementary region,

an injector region of the opposite conductivity type formed in said central portion of each said elementary region essentially under said insulating layer to be essentially surrounded by the respective thicker portions of said insulating layer of the elementary region,

at least two regions of the opposite conductivity type in each elementary region, located selectively between said thicker portions of said insulating layer and said V-shaped grooves of the respective elementary region, and

at least one region of the first conductivity type located in each one of said at least two regions of the opposite conductivity type,

wherein said V-shaped grooves surround each said elementary region and include deep V-shaped grooves aligned in a first direction and shallow V-shaped grooves aligned transversely thereto, said deep V-shaped grooves extending through said first semiconductor layer, and said shallow V-shaped grooves terminating before reaching said substrate, so that selected corresponding portions in adjacent pairs of said elementary regions in said first direction are isolated while other selected corresponding portions of adjacent pairs of said elementary regions in the transverse direction are commonly connected as a result of said termination of said shallow V-shaped grooves, and

where the bottom of said thick oxide portions are below the top surface of the adjoining semiconductor regions, and

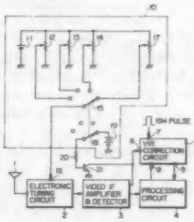
wherein each said elementary region includes a pair of vertical bipolar transistors comprising respective ones of said at least two regions of opposite conductivity type and the respective at least one region of the first conductivity type in each said region of the opposite conductivity type.

4,375,646

COLOR TELEVISION RECEIVER WITH MEANS FOR DISABLING VIR CORRECTION DURING REPRODUCTION OF RECORDED BROADCAST SIGNALS

Yukio Okabe, and Yasuaki Watanabe, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed May 19, 1980, Ser. No. 151,536
Claims priority, application Japan, May 22, 1979, 54-62237
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—21 V **4 Claims**



1. A color television receiver adapted to receive a color television signal which contains a vertical interval reference (VIR) signal in the vertical blanking interval of the received signal, said receiver having means for detecting the color television signal to produce a video signal, a VIR correction circuit receiving the video signal at an input terminal thereof for deriving a correction signal indicative of the deviation in hue and color saturation of the received signal from respective reference values, means for reducing said deviation substantially to zero in response to said correction signal, and means for selectively causing the receiver to be tuned to one of a plurality of broadcast television signals each containing said VIR signal and to be tuned to a program source which reproduces a recorded video signal by mixing video signals of adjacent horizontal lines, said receiver comprising means for inhibiting the detected video signal from being supplied to an input terminal of said VIR correction circuit when said receiver is tuned to said program source.

4,375,647

LIGHT VALVE SCANNER AND SCANNER/PRINTER APPARATUS FOR COLOR ORIGINALS

Jose M. Mir, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,935
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—75 **22 Claims**

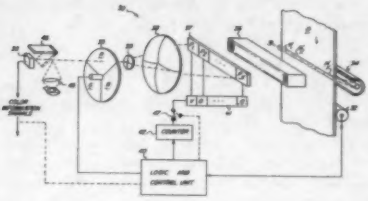
1. Apparatus for scanning successive lines of a multicolor original moved past a linear scan station of the apparatus and producing electrical signals indicative of the color image information of such lines, said apparatus comprising:

(a) photodetector means responsive to incident illumination

for producing electrical signals indicative of color separation illuminations thereof;

(b) illuminating means for producing a plurality of discrete color separation illuminations of said photodetector means via each line passing said scan station;

(c) light valve array means, including a plurality of discrete pixel portions which are respectively optically aligned with discrete pixel zones of said linear scan station and independently electrically addressable, for controlling



color separation illuminations of said photodetector means; and

(d) scan address means for addressing said pixel portions in a predetermined sequence and in timed relation to the movement of such original to sequentially transmit pixel illumination to said photodetector means;

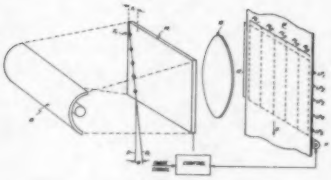
whereby said photodetector means will produce a plurality of discrete color separation information signals, each including serial pixel information, for each image line passing said scan station.

4,375,648

HIGH-RESOLUTION LIGHT VALVE APPARATUS FOR ELECTRONIC IMAGING

Jose M. Mir, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,973
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—75 **8 Claims**



1. Improved light valve apparatus for simplified, high resolution, electronic imaging, said apparatus comprising:

(a) means defining an area imaging station having entrance and exit regions;

(b) means for transporting photosensitive recording medium through said imaging station in a first direction during an overall line exposure period;

(c) means for directing uniform illumination along an optical path toward said imaging station; and

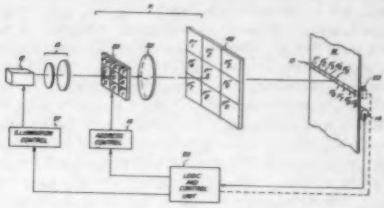
(d) an area light valve array disposed between the illumination means and the imaging station and having two electrooptic panels, on which linear electrodes define electrically-activatible, light modulator strips, and sandwiching polarizing means which cooperate with said panels to control light passage in response to the activation of such modulator strips, said panel being located with respective strips generally orthogonal and the strips of one of said panels each extending across the projection of said optical path from said entrance region to said exit region at an oblique angle to said first direction.

4,375,649

SCANNING DEVICE WITH AREA-TO-LINEAR MAPPING AND RELATED ELECTRONIC SCANNER/PRINTER APPARATUS

Jose M. Mir, Rochester; Jerry R. Varner, Fairport, and Clark N. Kurtz, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,974
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—75 **17 Claims**



1. A light valve device adapted to control the passage of light selectively to discrete ones of a plurality of pixel zones respectively located along a linear pixel region, said device comprising:

(a) an area light valve array having a plurality of discretely-addressable pixel portions distributed in a two-dimensional pattern;

(b) lens means for imaging said two-dimensional pattern of pixel portions at an intermediate image plane; and

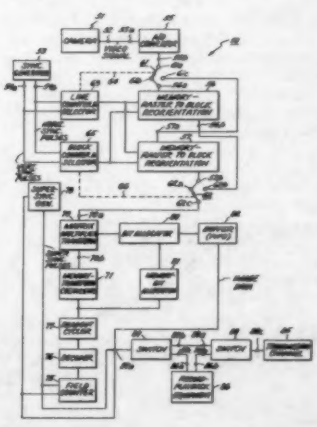
(c) optical mapping means, located at said intermediate image plane, for re-imaging the incident two-dimensional pattern of pixel portions as a predetermined one-dimensional line pixel pattern at such linear pixel region.

4,375,650

SYSTEM FOR PROCESSING VIDEO SIGNALS

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 29, 1981, Ser. No. 258,856
Int. Cl.³ H04N *7/12*; G06F *15/332*
U.S. Cl. 358—133 **14 Claims**



1. In combination,

means for providing a video signal having a plurality of first sequences of values, each value of a first sequence derived

from the intensity of a respective element of a picture, said picture having a plurality of elements mappable into rows and columns thereof, said picture being segmented into a plurality of identical blocks of elements, each block having rows and columns of elements, each block of elements represented by a respective set of subsequences of said first sequence of values,

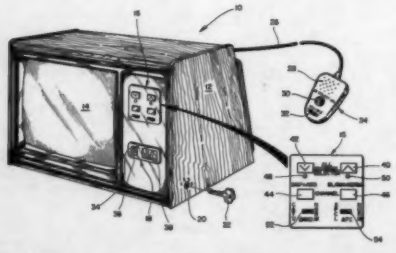
means for transforming each of said first sequences into a respective second sequence of values, said transformation including transforming each set of subsequences of a first sequence corresponding to a block of picture elements into a respective set of spatial frequency components of a respective block thereof, each block of spatial frequency components including rows representing different values of vertical spatial frequency ranging from low to high values of spatial frequency, and columns representing different values of horizontal spatial frequency ranging from the low to high values of spatial frequency, each component being a unique combination of a row and a column spatial frequency, said block of components being segmented into several groups of components, each group including components of a different range of spatial frequency values, the group including the component with both spatial frequency values equal to zero being designated the first group and the group including the component with the largest sum of spatial frequency values being designated the last group, said groups of components including different numbers of components, the first group including the smallest number of components and at least one of the other groups having the largest number of components, each second sequence including a series of sets of components, each set of a second sequence including a predetermined number of spatial frequency components from each of said groups arranged in a predetermined order within and among said groups, correspondingly ordered spatial frequency components from said sets of a second sequence having the same spatial frequency values, sets of components of successive second sequences having successively different combinations of spatial frequency components in accordance with a predetermined schedule, a predetermined number of successive second sequences equal to the number of components in the largest of said groups constituting a supersequence, successive supersequences representing successive pluralities of successive pictures corresponding to a scene.

4,375,651

SELECTIVE VIDEO RECEPTION CONTROL SYSTEM

Frank C. Templin, Arlington Heights, and Thomas J. Zato, Palatine, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 27, 1981, Ser. No. 287,410
Int. Cl.³ H04N *5/44*
U.S. Cl. 358—191.1 **15 Claims**



1. In a microcomputer controlled indirect frequency synthesis tuning system for tuning a television receiver to a desired channel in a designated one of a plurality of frequency bands, a programmable system for selectively limiting the channels and frequency bands to which said television receiver may be tuned comprising:

first memory means in said microcomputer for storing channel tuning and frequency band switching information;

first control means coupled to an electrical line source for applying said line source to said television receiver when engaged and coupled to said microcomputer for reading frequency band switching information representing a plurality of designated groups of channels from said first memory means and for providing said frequency band switching information to said tuning system;

second control means coupled to said microcomputer for selectively storing in said first memory means channel access information for tuning to a selected channel or channel skip information for inhibiting tuning to a selected channel; and

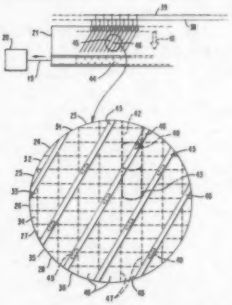
third control means coupled to said microcomputer for reading from said first memory means in an increasing or decreasing channel number sequence channel access or skip information and channel tuning information and for respectively providing or not providing said channel tuning information to said tuning system in limiting the tuning of said television receiver only to selected channels in each of said plurality of frequency bands.

4,375,652

HIGH-SPEED TIME DELAY AND INTEGRATION SOLID STATE SCANNER

James M. White, Mint Hill, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,882
Int. Cl.³ H04N *3/15*; H01L *27/14*
U.S. Cl. 358—213 **3 Claims**



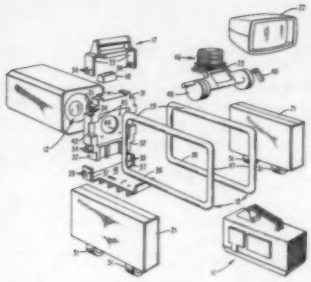
1. An image scanner for converting a radiation image pattern into an electronic image, including a time delay and integration array and means for moving the radiation image pattern relative to the array along a first direction, the array including a semiconductor member having a plurality of contiguous photosensitive electrical charge holding regions, each of said regions extending along said first direction and having a radiation receptive surface, and a plurality of control electrodes, each extending substantially at right angles to said first direction and overlying adjacent portions of the radiation receptive surface of said regions, said control electrodes being capable of conducting both said radiation pattern and electrical current, control means for applying control voltages to selected ones of said control electrodes in synchronism with said relative movement, and a plurality of relatively opaque electrical conductors extending angularly across said regions and said control electrodes and interconnecting said control means with said control electrodes.

4,375,653

CAMERA MOUNT

Darrell S. Staley, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 10, 1981, Ser. No. 252,757
Int. Cl.³ H04N 5/30
U.S. Cl. 358—229 11 Claims



1. A studio mount for a portable camera of the type having a lens assembly detachably mounted thereon, and an associated view-finder, characterized in the provision of:

a camera attachment assembly adapted for mounting said camera and lens assembly complete thereon;

said attachment assembly also being adapted for attachment to a base assembly; and

a protective grille assembly mounted on said attachment assembly and defining a cage extending generally around the space that is occupied by said camera when mounted;

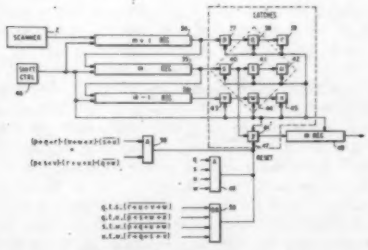
said cage grille assembly having mutually supporting and strengthening connections with said attachment assembly and with said view-finder.

4,375,654

FACSIMILE VECTOR DATA COMPRESSION

John M. Evans, Southampton; Ian D. Judd, Chandlers Ford; Richard H. Lovie, Porchester, and John F. Minshull, Olivers Battery Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 840,464, Oct. 7, 1977. This application Aug. 2, 1979, Ser. No. 63,311
Claims priority, application United Kingdom, Dec. 20, 1976, 53036/76
Int. Cl.³ H04N 7/12
U.S. Cl. 358—260 1 Claim



1. In a method for compressing objects formed from contiguous pels having the same first color value in an m×n array of pels by vector encoding reduced objects, said method includes the step of thinning each object by raster scanning the array and retaining in the original array locations i, j, only those pels of the first color which define a color transition or border and deleting all others, $1 \leq i \leq m$, $1 \leq j \leq n$; wherein the improvement comprises the steps of:

testing each retained pel in each ith scan line of the processed array of thinned objects in order to determine its contiguity and linear position relationship to a pel of the same first color value in either the ith or the ith−1 scan lines, by ascertaining whether said retained pel lies within a region of contiguous retained pels (FIG. 21/154) and if it lies within said region, ascertaining whether said retained pel lies within an aperture (FIG. 19) whose sides constitute an angle of acceptance (FIG. 20/156, 157), and if it lies within said aperture, narrowing said aperture so as to define a smaller included angle (FIG. 20/159); and

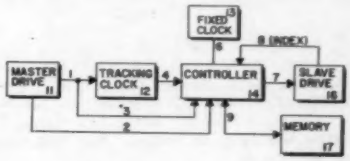
encoding each retained pel in said ith scan line of the processed array of thinned objects either as the origin of a new vector if the retained pel is noncontiguous, as a continuation of a previous vector if the retained pel is both contiguous and linear, or as a termination of a previous vector if the retained pel is contiguous and nonlinear, the steps of testing and encoding being performed on a consecutive raster scan line-at-a-time basis.

4,375,655

UNIVERSAL DIGITAL DATA COPYING SYSTEM

Gerald C. Korth, and John J. Gaukel, both of Omaha, Nebr., assignors to Memory Control Technology Corporation, Omaha, Nebr.

Filed Jan. 2, 1981, Ser. No. 222,178
Int. Cl.³ G11B 5/86
U.S. Cl. 360—15 6 Claims



1. A digital data duplication system for the blind copying of digital data from a master onto a slave, comprising,

a master drive means operative to read the digital data from a master,

a slave drive means operative to record onto a slave the digital data read from the master,

a controller operatively electronically connected between said master drive means and slave drive means,

an electronic tracking clock electronically connected to the controller and operative to establish as an output to the controller cell intervals determined as a function of the base frequency of the data being read by the master drive means,

said controller being operative to receive read data from the master drive means and to establish that data in the cell intervals defined by the tracking clock,

a buffer memory operatively connected to the controller for briefly storing the read data established in cell intervals, and

a fixed clock operative to provide fixed clock pulses to the controller at a fixed clock rate,

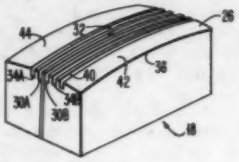
said controller being operative to transmit the read data from the buffer memory to the slave drive means at said fixed clock rate.

4,375,656

MAGNETIC HEAD ASSEMBLY WITH ASYMMETRIC SLOTTED CONFIGURATION

Anton J. Radman, Jr., Ogden, Utah, and Ricardo Yudico, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1980, Ser. No. 195,585
Int. Cl.³ G11B 5/22, 17/32
U.S. Cl. 360—102 4 Claims



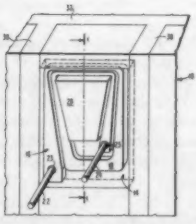
1. A magnetic head assembly useful for transducing coaction with a flexible magnetic disk comprising:
a support arm;
a magnetic head mounted to said arm, said head having a contoured face with a centrally located transducing gap;
first and second grooves formed on said contoured face and symmetrically disposed about said transducing gap with the axes of said grooves being substantially perpendicular to the axis of said transducing gap;
third and fourth grooves formed on said contoured face and disposed parallel to said first and second grooves and spaced symmetrically about said first and second grooves and said transducing gap, said first and third grooves being located inboard of said gap, said second and fourth grooves being located outboard of said gap;
an offset groove formed on said contoured face outboard of said fourth groove towards the outer portion of said head relative to the periphery of said disk, all of said grooves being substantially parallel on said contoured face.

4,375,657

MAGNETIC HEAD ASSEMBLY

George W. Brock, 27472 Altamount Rd., Los Altos Hills, Calif. 94022; Robert N. Hyland, 4020 N. Holster Dr., Tucson, Ariz. 85715; Edward J. Pawlowski, 7022 E. Calle Cerce, Tucson, Ariz. 85715, and Frank B. Shelledy, 3640 N. Allwood Pl., Tucson, Ariz. 85715

Filed Nov. 3, 1980, Ser. No. 203,282
Int. Cl.³ G11B 5/22, 5/20
U.S. Cl. 360—125 5 Claims



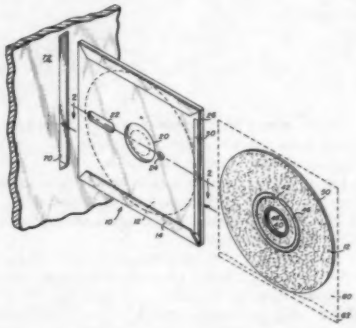
1. A ferrite magnetic head assembly comprising:
a ferrite magnetic substrate having a configured surface;
a recessed channel formed on said configured surface of said substrate;
a conductive thin film coil disposed in said channel;
a rectangular ferrite magnetic closure section having a planar surface coextensively contiguous with said configured surface for engaging said configured surface and for enclosing said conductive coil; and
an insulating layer deposited on said configured surface and between said coil and said configured surface for providing a transducing gap.

4,375,658

CLEANING DISK

Lawrence G. Martinelli, San Jose, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Jan. 14, 1981, Ser. No. 224,951
Int. Cl.³ G11B 5/41, 23/02, 25/04
U.S. Cl. 360—128 7 Claims

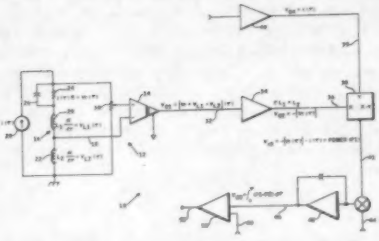


1. A cleaning disk assembly for cleaning a reading and writing transducer of a floppy disk drive comprising:
an envelope for enclosing a cleaning disk formed from sheet polymeric material, the envelope having a circular central aperture formed through side surfaces thereof for receiving a spindle of a floppy disk drive to sense the presense of a cleaning disk enclosed within the envelope, the envelope further having a first aperture formed through a first side surface thereof for receiving a first reading and writing transducer of a floppy disk drive whereby said transducer may contact a surface of a cleaning disk enclosed within the envelope, the envelope including an edge opening formed along one edge thereof for inserting a cleaning disk thereinto and for removing a cleaning disk therefrom, the envelope further including a reinforcing means at said edge opening thereof for increasing the mechanical rigidity of the envelope, with said reinforcing means comprising a U-shaped strip of sheet polymeric material rigidly secured about the edge of one said side surface of the envelope immediately adjacent to said edge opening, in an enclosing manner about said edge of said side surface; and
a circularly-shaped cleaning disk for insertion into the envelope formed from fibrous sheet cleaning material, the disk having a circular central aperture formed therethrough for engagement by a spindle of a floppy disk drive, the disk also having a sensing aperture formed therethrough for permitting a floppy disk drive to sense the presence of the cleaning disk when the cleaning disk is inserted into a floppy disk drive, the disk further including a C-shaped optically opaque annular member within an annular region of a surface of the disk centered about said central aperture, said annular region including said sensing aperture of the disk, and said C-shaped opaque annular member being comprised of an opaque polymeric material rigidly secured to a surface of said disk.

4,375,659
ELECTRONIC CIRCUIT FOR THE DETECTION AND ANALYSIS OF NORMAL ZONES IN A SUPERCONDUCTING COIL

Steven M. Cunningham, La Mesa; James C. Marsden, La Jolla, and Hubert G. Arrendale, Jr., San Diego, all of Calif., assignors to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Sep. 21, 1981, Ser. No. 303,731
Int. Cl.³ H02H 3/02
U.S. Cl. 361—19 9 Claims



1. In an electronic circuit for the detection and analysis of normal zones in a superconducting coil, the combination of:

a balanced bridge circuit electrically coupled to a superconducting coil and producing an output voltage signal proportional to the inductance and series resistance of the coil;

means coupled to the bridge circuit to receive the output voltage signal and to multiply it by a signal representing current in the superconducting coil, the resultant signal representing the real power being dissipated in the superconducting coil;

means coupled to the multiplying means to receive the signal representing the power being dissipated in the superconducting coil and to subtract from said signal a signal representing the background power loss in the superconducting coil, and then to integrate the difference signal with respect to time to generate a signal on an output lead representing the energy being dissipated within the superconducting coil;

means coupled to said integrating means to receive the signal representing the energy being dissipated within the superconducting coil and to compare it against a signal representing a critical energy reference and to provide a quench signal when the critical energy reference is exceeded; and

means connected to the comparing means to receive a quench signal, to disconnect the superconducting coil from its power source and permit dissipation of the stored energy into an external device.

4,375,660
GROUND ISOLATION MONITORING APPARATUS HAVING A PROTECTIVE CIRCUIT

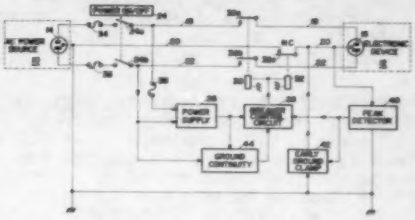
Stanley H. Tate, Portland; Donald K. Roberts, Beaverton; Carl E. Hollingsworth, and William R. Nute, both of Portland, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 3, 1981, Ser. No. 230,997
Int. Cl.³ H02H 3/14
U.S. Cl. 361—50 16 Claims

1. An apparatus for monitoring an earth ground path between an AC power source and an electronic device, comprising:

means for isolating a portion of said earth ground path from earth ground;

detection means coupled to said isolated portion of said earth ground path for detecting a hazardous electrical condition thereon, said detection means comprising a full-wave rectifier and a pulse-generating circuit for developing a pulse when the voltage or current on said isolated portion of said earth ground path exceeds a predetermined value; and

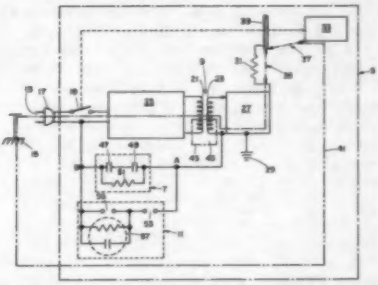


control circuit means comprising electronic switch means responsive to said pulse from said detection means for reconnecting earth ground to said isolated portion of said earth ground path.

4,375,661
OVERVOLTAGE PROTECTION CIRCUIT FOR A TELEVISION

Stanley D. Savic, Westchester, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation of Ser. No. 73,777, Sep. 10, 1979, abandoned. This application Aug. 26, 1981, Ser. No. 296,101
Int. Cl.³ H02H 3/14, 3/20
U.S. Cl. 361—91 3 Claims



1. A transient high voltage viewer protection network for a television receiver having a high voltage source floating with respect to earth ground and a low voltage source and including a high voltage transformer having a primary winding energized by said low voltage source and a secondary winding for energizing said high voltage source, said viewer protection network comprising:

a first high threshold voltage rapid discharge device having first and second electrodes, said first electrode coupled to the secondary winding of said high voltage transformer;

a second high threshold voltage rapid discharge device having third and fourth electrodes, said third electrode coupled to the second electrode of said first high threshold voltage rapid discharge device and said fourth electrode coupled to said low voltage source, said first and second high threshold voltage rapid discharge devices having essentially equal breakdown voltage ratings; and

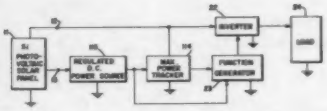
parallel capacitor-resistor means coupled across said second high threshold voltage rapid discharge device, such that a transient high voltage discharge in said high voltage transformer causes the first high threshold voltage rapid discharge device to discharge when its breakdown voltage

rating is exceeded, rapidly followed by the discharge of said second high threshold voltage rapid discharge device thereby limiting the potential difference between said high voltage transformer and said low voltage source by providing a safe means for high voltage discharge in protecting the viewer of said television receiver from high voltage shock.

4,375,662
METHOD OF AND APPARATUS FOR ENABLING OUTPUT POWER OF SOLAR PANEL TO BE MAXIMIZED

Richard H. Baker, Bedford, Mass., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 26, 1979, Ser. No. 97,204
Int. Cl.³ H02P 13/18; G05F 5/00
U.S. Cl. 363—95 **42 Claims**

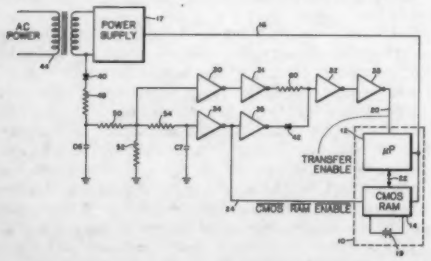


18. Apparatus for indicating whether the current derived from a photovoltaic solar panel should be increased or decreased in order to maximize the output power supplied by the panel to a load, the panel having a family of curves for voltage versus current output parameters of the panel, the open circuit voltage of each curve in the family increasing as the level of incident solar energy on the panel increases for a predetermined temperature, said curves having a maximum power point, the curves having slopes with absolute values greater than one and less than one for currents respectively greater than and less than the maximum power point, comprising means for incrementally changing the load on the panel, whereby a change in the panel output voltage results from the change in load, the magnitude of the voltage change being dependent on the slope of the curve for the incident radiation and temperature and the load change, and means responsive only to the voltage change resulting from the incremental load change for indicating whether the change in the panel voltage resulting from the incremental load change is above or below a reference value.

4,375,663
POWER FAILURE EARLY WARNING CIRCUIT FOR MICROPROCESSOR WITH CMOS RAM MEMORY

Samuel A. Arcara, Telford, and Howard S. Hoopes, Hatfield, both of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Mar. 31, 1980, Ser. No. 135,418
Int. Cl.³ G06F 1/00; G11C 13/00
U.S. Cl. 364—200 **2 Claims**



1. In a microprocessor based product having a CMOS random access memory connected to the microprocessor for storing data and a dc power supply for said microprocessor and memory derived from a primary ac source, apparatus for preserving the data in memory and for preventing incorrect transfers by said microprocessor when there is a loss of primary ac power, comprising:

means operable in direct response to the loss of primary ac power and independent of the dc supply to produce a first signal;

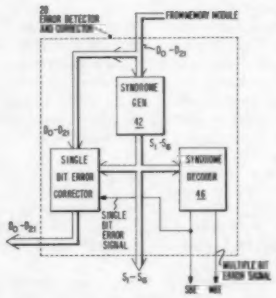
means operable in response to said first signal to prevent initiation of the transfer of data from said microprocessor to said memory; and

means directly responsive to the loss of primary ac power and independent of the dc supply for producing a second signal on the CMOS RAM ENABLE line of the memory a predetermined time after said first signal so as to disable said memory and place it in standby condition, said predetermined time being a period which is shorter than the period required for the voltage of the dc supply to decay below that level necessary to provide for correct transfer to memory but longer than the period for transfer of a complete block of data.

4,375,664
APPARATUS FOR DETECTING, CORRECTING AND LOGGING SINGLE BIT MEMORY READ ERRORS USING SYNDROME GENERATING AND DECODING CIRCUITRY

Dongsung R. Kim, Laguna Hills, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 156,113, Jun. 3, 1980. This application Jul. 3, 1980, Ser. No. 165,884
Int. Cl.³ G06F 11/10
U.S. Cl. 364—200 **8 Claims**



1. In a data processing system, the combination comprising:

selectively addressable storage means including a plurality of memories;

addressing means for selectively writing into and reading out data from a selected one of said memories;

means for providing a plurality of check bits along with data written into each memory location of said selected memory, said check bits being chosen so as to permit detecting and correcting of all single bit memory read errors appearing in memory data read from any location of said selected memory;

local error detection and correction means, one for each said memory, for detecting and correcting said single bit memory read errors in data read from its respective memory and for automatically restoring corrected data back into the respective memory location whenever a single bit memory read error is detected;

common error detection and correction means to which data read from each memory is applied without correction by its respective local error detection and correction means;

said common error detection and correction means including:

a syndrome generation means responsive to said applied memory data for generating a syndrome signal pattern indicating whether a single bit error is present in the applied memory data and if so the particular bit in error;

syndrome decoding means responsive to said syndrome bit signal pattern for producing a single bit error signal indicating the presence of a single bit error; and

single bit error correction means responsive to said syndrome pattern and said single bit error signal for correcting a single bit error occurring in said applied memory data; and

selective error determining means operative in response to said single bit error signal, said addressing means, and said syndrome pattern for indicating when a detected single bit error in data read from a memory is likely to be hardware related by determining whether this same error has been consecutively detected a predetermined plurality of times for the same memory location.

4,375,665

EIGHT BIT STANDARD CONNECTOR BUS FOR SIXTEEN BIT MICROCOMPUTER USING MIRRORED MEMORY BOARDS

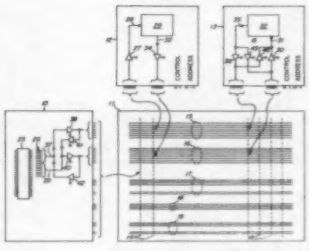
Robert W. Schmidt, Stafford, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 898,735, Apr. 24, 1978, Pat. No. 4,213,177. This application Jul. 14, 1980, Ser. No. 168,908

The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **9 Claims**



1. A microcomputer system comprising: a processor having sixteen-bit bidirectional data terminals; at least two memory means each containing separate eight-bit unidirectional Data-In and Data-Out lines, each memory means containing a memory array with an input and an output and unidirectional coupling means connecting the array to the Data-In lines and to the Data-Out lines to transfer data to and from the array; connector means containing a bus with a plurality of conductor means to interconnect the processor and memory means, the connector means having separate eight-bit Data-In and Data-Out lines for connection to said lines on the memory means; said unidirectional coupling means on the memory means connecting the eight-bit Data-In and Data-Out lines to the input and output, respectively, of the memory array on both of the memory means, said unidirectional coupling means selectively connecting the eight-bit Data-In and Data-Out lines to the output and input, respectively, of the memory array contained in one of said memory means whereby coupling is in opposite directions on said one of the memory means relative to the other; and connecting means for the processor connecting the sixteen-bit bidirectional data terminals of the processor to the two separate eight-bit Data-In and Data-Out lines of the connector means, said processor including means for simultaneously transmitting or simultaneously receiving sixteen bits to or from said memory arrays by utilizing said Data-In and Data-Out lines as a sixteen bit bidirectional bus.

4,375,666

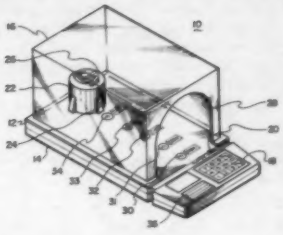
ELECTRONIC GUESSING GAME

Gordon H. Buck, Torrance; Scott A. Ferdinand, Hermosa Beach, and George J. Klose, Lomita, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 2, 1981, Ser. No. 222,099

Int. Cl.³ G06F *15/44*; A63F *9/00*

U.S. Cl. 364—410 **5 Claims**



1. An electronic game comprising:

means for selecting a secret number;

means for selecting a second number as a guess to the secret number;

means for determining the magnitude of the difference between the secret number and the second number; and

means for providing a signal indicative of the magnitude of the difference between the secret number and the second number, including:

a plurality of locations each of which represents a predetermined value of the magnitude of the difference between the secret number and the second number;

means enabling a player of the game to choose a location; and

means for generating the signal in response both to the chosen location and to the magnitude of the difference between the secret number and the second number.

4,375,667

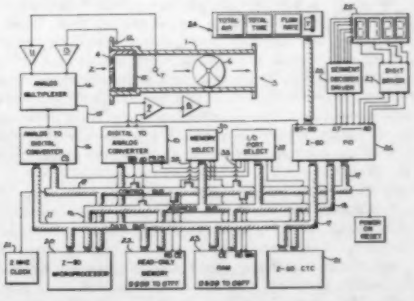
PERSONAL AIR SAMPLING SYSTEM

Roy M. Buchan, 304 Flicker Dr., Fort Collins, Colo. 80526

Continuation-in-part of Ser. No. 178,136, Aug. 14, 1980, abandoned. This application Dec. 29, 1980, Ser. No. 220,320

Int. Cl.³ G06F *15/42*; G01N *1/22*

U.S. Cl. 364—418 **11 Claims**



1. A personal air sampling device which comprises:

a housing defining an air passageway having an air intake and an exhaust;

an air pump mounted to the housing for pumping air through the air passageway;

an air contaminant collection device connected to collect material in the air flowing through the air passageway;

air velocity sensor means mounted to the housing and being operable to generate a signal indicative of the velocity of the air passing through the air passageway;

converter means coupled to the velocity sensor means for periodically reading the velocity sensor signal and converting it to a digital velocity number indicative of the velocity of the air passing through the air passageway;

first calculation means coupled to the converter means for receiving said digital velocity number and calculating an incremental air flow volume number which is indicative of the volume of air flowing through the air passageway during a preset time increment;

second calculation means coupled to the first calculation means for adding together each calculated incremental air flow volume number to form a total air volume number; and

display means coupled to the second calculation means to receive the total air volume number and provide a visual indication of that number.

4,375,668

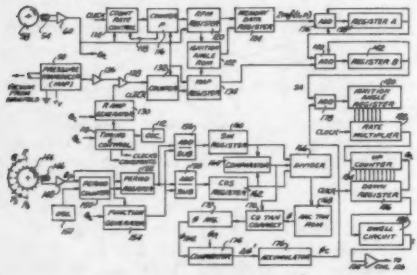
TIMING OPTIMIZATION CONTROL

Chun-Keung Leung, Farmington; John J. Schira, Westland, and Edwin A. Johnson, Clarkston, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 904,137, May 8, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,392

Int. Cl.³ F02B *3/04*; F02P *5/08*

U.S. Cl. 364—431.08 **22 Claims**



1. A closed loop timing optimization control for an internal combustion engine having engine sensors for generating signals indicative of at least one engine operating parameter, an engine control responsive to the signals generated by the sensors for generating fuel delivery signals indicative of the engine's fuel requirement, means for delivering fuel to the engine in response to the fuel delivery signals, a plurality of combustion chambers receiving and burning the fuel therein in a predetermined sequence, and an output shaft receiving sequential rotational torque impulses in response to the burning of the fuel in each of the combustion chambers, the timing optimization control comprising:

first sensor means for generating combustion chamber reference signals at predetermined rotational positions of the shaft, each of said combustion chamber reference signals being associated with one of said combustion chambers and having a predetermined relationship to the sequence in which the fuel is burned in each of the combustion chambers, and wherein at least one of said combustion chamber reference signals identifies at least one particular combustion chamber;

second sensor means for generating velocity signals indicative of a characteristic of the instantaneous rotational velocity of the engine's output shaft;

correction signal generator means for generating a plurality of timing correction signals, one for each combustion chamber, in response to said combustion chamber reference signals and changes in said velocity signals associated with torque impulses generated by combustion in each combustion chamber, each of said correction signals being indicative of a timing correction required to the engine's timing signals to cause the torque impulses generated by each combustion chamber to impart to the engine's output shaft a maximum rotational velocity at a predetermined angle with respect to said combustion chamber reference signals; and

means for generating timing signals for the engine control in response to said combustion chamber reference signals and said timing correction signals operative to control at least one timing function of the engine control.

4,375,669

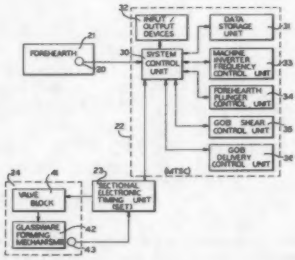
ELECTRONIC CONTROL SYSTEM FOR A GLASSWARE FORMING MACHINE

William E. Johnson, Toledo; Thomas F. Michalski, Maumee, and William H. Ryan, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 5, 1980, Ser. No. 204,133

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—473 **11 Claims**



1. In a glassware forming machine having means responsive to a speed control signal for forming and distributing gobs of molten glass to a plurality of individual glassware forming sections, glassware forming means in each of the individual sections for forming glassware articles from the gobs of the molten glass in a series of predetermined forming steps in response to a plurality of control signals, and control means for generating the speed signal and the control signals, the control means comprising:

a source of a signal representing a physical characteristic of the gobs of molten glass;

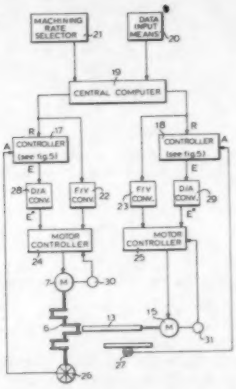
means responsive to said physical characteristic signal for generating a speed control signal varying in response to changes in the value of said physical characteristic signal; and

means responsive to said varying speed control signal for generating the plurality of control signals at a rate adjusting in response to changes in the value of said varying speed control signal to define a forming cycle time for the machine.

4,375,670
MACHINE TOOL FOR MACHINING CRANKSHAFTS AND CONTROL SYSTEM FOR THE MACHINE TOOL

Johanna Kralowetz, Steyr, and Manfred Tischler, Haag, both of Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft mbH, Steyr, Austria

Continuation-in-part of Ser. No. 89,239, Oct. 29, 1979, abandoned. This application Jul. 1, 1981, Ser. No. 279,240
Int. Cl.³ C05B 19/415; B23B 5/18
U.S. Cl. 364—474 7 Claims



5. A machine tool for machining crankshafts, comprising:

(a) a frame having a fixed longitudinal axis;

(b) workpiece holding means mounted in said frame for rotation about said axis and adapted to support and to be non-rotatably connected to a crankshaft centered on said axis;

(c) a tool carriage slidably mounted on said frame for a displacement which is transverse to said axis;

(d) first drive means for imparting an angular rotation to said workpiece holding means about said axis;

(e) second drive means for displacing said tool carriage in said transverse direction; and

(f) control means having first and second separate but identical controllers for independently controlling said first and second drive means respectively such that said angular rotation and transverse displacement are each performed in a predetermined nonlinear relationship in response to independent control signals applied via a pair of mutually non-interactive drive channels, each channel including one of said first and second controllers.

4,375,671
METHOD AND MEANS FOR FILTERING AND UPDATING PIXEL DATA

Gary L. Engle, Fair Oaks, Calif., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Nov. 3, 1980, Ser. No. 203,659
Int. Cl.³ G06F 15/20; H04N 5/14
U.S. Cl. 367—11 6 Claims

1. In an ultrasonic scanner system in which video scanned data is defined for a plurality of addressable pixels in an electron beam display, a method of selectively updating stored pixel data in response to repetitive ultrasonic beam scans comprising the steps of

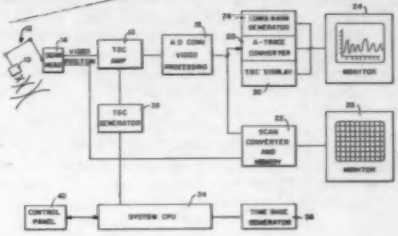
storing pixel data to be displayed in a first random access memory,

storing filtered values of pixel data in a second random access memory, each filtered value being intermediate two address values for the filtered value,

establishing a present intensity value for a pixel in response to an acoustic beam scan,

obtaining from said first random access memory the stored intensity value for said pixel,

addressing said second random access memory using said present intensity value and said stored intensity value as a memory address,



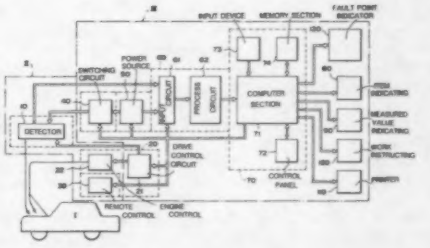
updating said first random access memory for said pixel with said filtered value addressed in said second random access memory when said present value and said stored value are both above a threshold, and

updating said second random access memory for said pixel value with one address value when the other threshold value is below said threshold.

4,375,672
ENGINE ANALYZER

Takayuki Kato, Nishikamo; Toshio Tsuji, Gifu, and Kiyokazu Konishi, Anjo, all of Japan, assignors to K.K. Toyota Chuo Kenkyusho, et al., Aichi, Japan

Filed May 5, 1980, Ser. No. 146,481
Claims priority, application Japan, May 7, 1979, 54-55955
Int. Cl.³ G01M 15/00
U.S. Cl. 364—551 29 Claims



1. An engine analyzer comprising:

detecting means including a plurality of sensors which when engine analysis is to occur are connected to given portions around an engine such as an internal combustion engine for detecting the characteristics of the respective given portions as electric signals;

engine drive control means including an auxiliary electric power source, which when engine analysis is to occur is connected from outside to an engine starter motor as the power source for said engine starter motor which is independent from the battery connected to the engine, and a control circuit capable of controlling a drive circuit of said engine starter motor from outside;

signal processing means for converting electric signals fed from said detecting means and said engine drive control means to indicate the characteristics of the respective portions of the engine into signal aspects to be easily processed;

centralized control means including a computer for successively operating and processing the outputs fed from said

signal processing means according to a preset program, comparing and determining said operation results with values preset in accordance with the respective signals and feeding command signals for the inspection and diagnosis of the engine; and

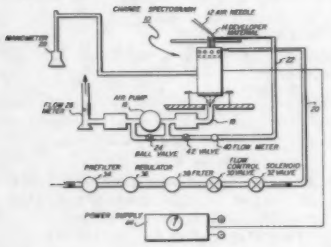
diagnosis indicating means being operable by the command signals fed from said centralized control means, including means for displaying each portion being inspected on a graphic display of a planar pattern, means for successively instructing the predetermined work procedures to an operator and means for giving the results of diagnosis of predetermined items of inspection.

4,375,673

CHARGE SPECTROGRAPH

Richard B. Lewis, Williamson; Richard F. Koehler, Jr., Webster, and Edward W. Connors, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 15, 1980, Ser. No. 186,981
Int. Cl.³ G06F *15/36*
U.S. Cl. 364—555 **21 Claims**



1. An apparatus for measuring the distribution of highly charged toner particles as a function of the size and charge thereof, including:

a housing defining an interior chamber;

a pump coupled to the interior chamber of said housing to produce a flow of air therethrough;

a plurality of screens disposed in the interior chamber of said housing with each of said plurality of screens being spaced from one another and having substantially uniform apertures therein to produce a substantially uniform pressure drop thereacross so that the air velocity is substantially uniform across the interior chamber of said housing;

means for forming a substantially uniform electrical field in the interior chamber of said housing;

means for introducing the toner particles into the interior chamber of said housing;

means for receiving the particles that have moved through at least a portion of the electrical field in the interior chamber of said housing; and

means for scanning said receiving means to form a display of the particles as a function of the charge and size thereof.

4,375,674

KINESIMETRIC METHOD AND APPARATUS

William E. Thornton, Friendswood, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

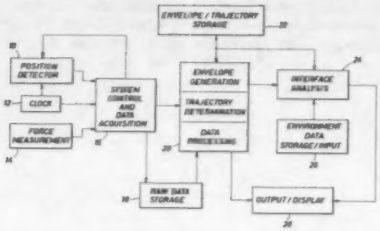
Filed Oct. 17, 1980, Ser. No. 198,093
Int. Cl.³ A61B *5/05*; G09B *19/00*; H04N *7/18*
U.S. Cl. 364—559 **27 Claims**

1. Apparatus for determining functional capability of bodies comprising:

a. position detector means for sensing the location of such a body in three dimensions;

b. force detector means for sensing force exerted by said body;

c. data acquisition means for acquiring information of positions of said body in three dimensions as a function of time from said position detector means and force exertion information from said force detector means; and



d. means for presenting information acquired by said data acquisition means descriptive of the limits of a selected envelope.

4,375,675

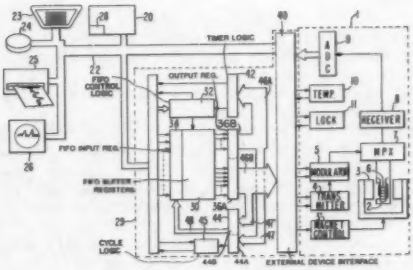
Patent Not Issued For This Number

4,375,676

FEEDBACK FIFO FOR CYCLIC DATA ACQUISITION AND INSTRUMENT CONTROL

Edward H. Berkowitz, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 26, 1979, Ser. No. 107,106
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **5 Claims**



1. The method of controlling the operational states of a data acquisition instrument comprising:

storing a sequence of a plurality of digital control words in a sequence of a plurality of memory registers comprising at least initial and final memory registers, said registers adapted for serial transfer of the contents thereof, each said digital word comprising at least a first and second portion thereof, said plurality of registers exceeding said plurality of digital words,

propagating said stored sequence of digital words in serial fashion along said sequence of registers, said propagation including transfer of said sequence of words from said final register of said sequence of registers to an output register,

establishing the state of said instrument in response to said first portion of the word transferred into said output register,

maintaining the established state of said intrument for a time interval determined in response to the second portion of the said transferred digital word,

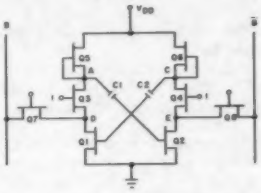
transferring the word transferred into said output register to said initial one said memory registers of said sequence of said plurality of memory registers, whereby said sequence of digital words is preserved.

4,375,677

DYNAMIC RANDOM ACCESS MEMORY CELL USING FIELD EFFECT DEVICES

Fritz L. Schuermeyer, 1759 Southview Dr., Yellow Springs, Ohio 45387

Filed May 20, 1981, Ser. No. 265,522
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—154 **2 Claims**



1. A random access memory cell in which all transistors are depletion mode field effect transistors, each having a source, a gate and a drain, used with two complementary bit lines, said memory cell comprising:

first and second branches; with each branch comprising a load transistor having its source-drain path connected between a first node and a direct-current bias potential, an active transistor having its source-drain path connected between a reference potential and a second node, an initiation transistor having its source-drain path connected between the first and second nodes, and an access transistor having its source-drain path connected between the second node and one of the bit lines;

a cross-coupling means comprising two capacitors connected so that the first node of each branch is coupled via one of said capacitors to the gate of the active transistor of the other branch;

the memory cell having an initiation mode in which the initiation transistors are turned on and then turned off by signals at their gates to bring the first nodes both to near said bias potential so that the bias potential appears across both capacitors, following which the memory cell flips into a stable state with one active transistor conducting and the other nonconducting;

and write and read modes in which the access transistors are both turned on by address signals at their gates.

4,375,678

REDUNDANT MEMORY ARRANGEMENT PROVIDING SIMULTANEOUS ACCESS

Robert H. Krebs, Jr., San Juan Capistrano, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 181,069
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—238 **21 Claims**

1. A memory system for data processing apparatus including a stack, comprising:

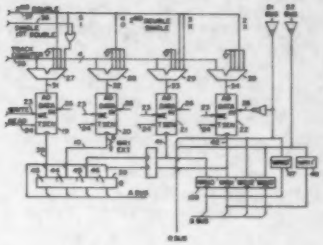
a logical functional unit having an input for receiving operands for performing stack operations, and an output;

data bus means coupled to the output of said functional unit;

stack memory means coupled to said data bus means for storing successive items of information on said data bus means in the form of a stack of sequentially accessible items;

stack image memory means coupled to said data bus for storing said successive items of information in the form of an array of simultaneously accessible items;

said stack image memory means comprises a plurality of substantially identical random access memory circuits; and



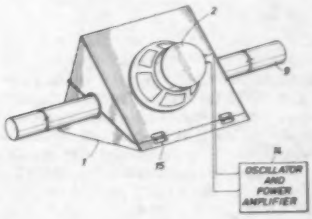
memory address means connected to each of said random access memory circuits for providing respective addresses to each of said random access memory circuits for storing each of said items of information.

4,375,679

HYDROPHONE ACOUSTIC RESPONSE CHAMBER

Lawrence D. Park, Jr., Sugarland, and William L. Roever, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 27, 1981, Ser. No. 239,092
Int. Cl.³ H04R *29/00*
U.S. Cl. 367—13 **8 Claims**

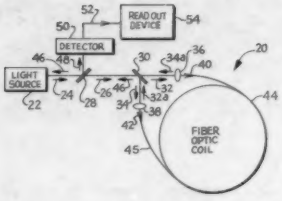


1. An apparatus for individually testing a seismic transducer in situ in a seismic cable, said seismic transducer being responsive to acoustic pressure changes and said apparatus comprising: a triangularly shaped housing comprising a first housing portion having rigid walls and first and second openings therein, a second housing portion having rigid walls and third and fourth openings therein and means for fastening said first housing portion to said second housing portion such that said first and third openings are aligned and said second and fourth openings are aligned to form two apertures that are sized to accommodate said cable, said first and second housing portions forming a chamber that is sized such that only one of said seismic transducers in said cable is positioned in said chamber when said cable is positioned in said apertures, said chamber having a maximum inner dimension that is less than the quantity determined by dividing the velocity of sound in air by the maximum frequency for which testing is desired; a reference transducer mounted in said chamber; sealing means for providing an airtight seal between said housing and the portion of said cable that is positioned in said apertures; and a signal source for imparting an acoustic pressure test signal of a finite frequency within said chamber.

4,375,680
OPTICAL ACOUSTIC SENSOR

Richard F. Cahill, El Toro, and Eric Udd, Huntington Beach, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Md.

Filed Jan. 16, 1981, Ser. No. 225,731
Int. Cl.³ G02B *5/11*; G01V *1/00*; H04B *9/00*
U.S. Cl. 367—149 **31 Claims**

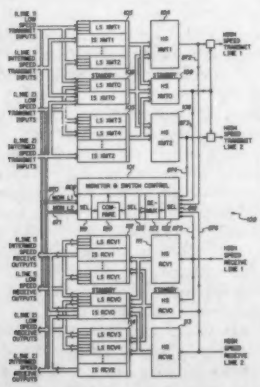


1. A sensor for acoustic energy which includes:
a light source which produces a light output;
a first beamsplitter positioned to split said light output of said light source into first and second beams;
fiber optic coil means having first and second opposite ends into which said first and second beams respectively are introduced, at least a portion of said fiber optic coil means being subjected to acoustic energy which nonreciprocally phase shifts said first and second beams, said first beamsplitter being positioned to recombine said first and second beams out of said second and first ends respectively into a third beam which is modulated by said acoustic energy; and
means to detect modulation present in said third beam and produce therefrom an output representative of said acoustic energy.

4,375,681
PROTECTED MULDEM WITH INTERCHANGEABLE CIRCUITS OF DIFFERENT DATA RATES

Ned E. Abbott, McKinney; Hampapur R. Keshavan, Dallas, and Robert J. McGuire, Richardson, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 3, 1980, Ser. No. 155,982
Int. Cl.³ H09J *3/14*
U.S. Cl. 370—16 **41 Claims**

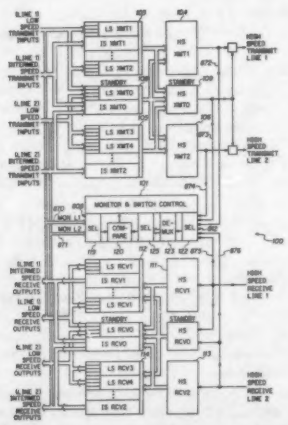


1. A high reliability digital multiplexer comprising in combination:
a plurality of parallel data input groups;
high speed transmitter means multiplexing said groups for high speed serial data transmission;
transmission means for each group comprising one of a plurality of interchangeable transmitter means having different input rates and identical output rates such that each group has a selectable data input rate according to choice of interchangeable transmitter means and such that each group transmits an identical data rate to said high speed transmitter means;
means for monitoring data paths through said group transmission means and high speed transmitter means, comprising
means for comparing input data on a selected path at said data input groups with corresponding data from said high speed transmitter means to detect errors, said comparing means including means, responsive to the rate of the path input data, for conditioning it for said comparing and
monitor control means, including
means for setting up a path to be monitored, including selecting the path, determining the rate of the data in the selected path and supplying information to said comparing means to control timing of the comparing in dependence on said determined rate, and
means for directing the monitoring of the selected path, including supervising operation of said comparing means and responding to said comparing to conduct a test of error rate; and
standby data protective switching means, responsive to said monitoring means, for providing an alternate data path around said transmission means.

4,375,682
PROTECTED MULDEM WITH INDEPENDENT PROTECTIVE SWITCHING OF CIRCUITS HAVING DIFFERENT DATA RATES

Ned E. Abbott, McKinney; Hampapur R. Keshavan, Dallas, and Robert J. McGuire, Richardson, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 3, 1980, Ser. No. 155,984
Int. Cl.³ H04J *3/14*
U.S. Cl. 370—16 **33 Claims**



1. A high reliability digital multiplexer comprising in combination:
a plurality of parallel data input groups;
normally on-line high speed data transmitter means multiplexing data from said groups for high speed serial transmission;
a plurality of normally on-line group transmitter means, one

for each group, receiving input data on a respective group and transmitting identical rate data to said high speed data transmitter means;

normally off-line standby group transmitter means having a parallel input with said plurality of parallel data input groups for protective bypass switching around any of said normally on-line group transmitter means;

normally off-line standby high speed data transmitter means having a parallel output with said normally on-line high speed data transmitter means for protective bypass switching therearound;

interconnection means capable of connecting the outputs of said plurality of normally on-line group transmitter means to either of said high speed data transmitter means, and capable of connecting the output of said standby group transmitter means to either of said high speed data transmitter means,

means for comparing input data selected from said data input groups with corresponding data selected from one of said high speed data transmitter means to detect errors;

means, interacting with said comparing means, for determining when said errors probably result from operation of an identified one of said group transmitter means; and

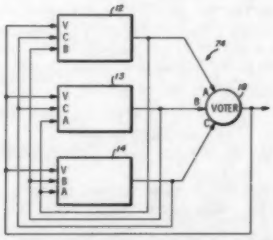
means, responsive to said determining and cooperating with said interconnection means, for switching data through the standby group transmitter means to bypass said identified means, independent of switching between said normally on-line and standby high speed data transmitter means.

4,375,683

FAULT TOLERANT COMPUTATIONAL SYSTEM AND VOTER CIRCUIT

John H. Wensley, Salem, Oreg., assignor to August Systems, Tigard, Oreg.

Filed Nov. 12, 1980, Ser. No. 205,935
Int. Cl.³ G06F *11/00*; H03K *19/08*
U.S. Cl. 371—36 **8 Claims**



1. A fault-tolerant computation system comprising:

a plurality of computational devices producing binary data output signals; and

a voter circuit having an input connected to each of the computational devices to receive the data output signals of the devices and adapted for producing an output which agrees with a majority of the binary input data signals received from the computation devices; wherein:

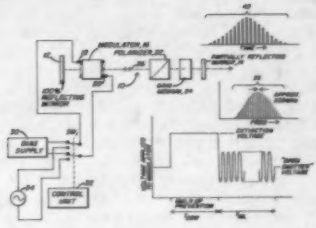
each computational device receives the output from the voter circuit and each of the other computational devices, whereby a disagreement between the voter circuit and one of the computational devices may be detected.

4,375,684

LASER MODE LOCKING, Q-SWITCHING AND DUMPING SYSTEM

Patrick N. Everett, Concord, Mass., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Jul. 28, 1980, Ser. No. 172,967
Int. Cl.³ H01S *3/098*
U.S. Cl. 372—18 **10 Claims**



1. In a laser having a resonant cavity and a gain medium disposed therein, apparatus for AM mode-locking, Q-switching and cavity dumping said laser comprising:

a polarizing element within said cavity;

a single electro-optical element disposed in said cavity for changing the direction of polarization of light passing therethrough in response to an applied voltage, said electro-optical element having a single pair of electrodes for applying said voltage; and

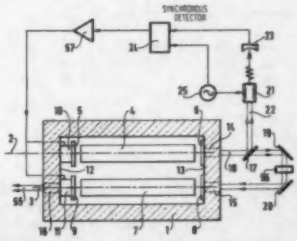
means for sequentially applying to said pair of electrodes a d.c. voltage until such time as a predetermined population inversion is achieved in said gain medium, a periodically varying voltage sufficient to effect mode-locking, and a subsequent voltage to said electrodes sufficient to effect cavity dumping.

4,375,685

GAS LASER ASSEMBLY WHICH IS CAPABLE OF EMITTING STABILIZED FREQUENCY PULSE RADIATIONS

Denis Le Goff, St Cyr L'Ecole, and Jean C. Guyot, Cernay la Ville, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Sep. 2, 1980, Ser. No. 183,494
Claims priority, application France, Aug. 31, 1979, 79 21881
Int. Cl.³ H01S *3/13*
U.S. Cl. 372—32 **7 Claims**



1. A gas laser assembly which is capable of emitting frequency stabilized pulse radiation, said assembly including:

a first gas laser generator comprising two reflectors disposed to form a first optical resonant cavity, a first piezoelectric component provided with electrodes so as to cause the length of the cavity to vary by applying a variable voltage to said electrodes, one of said two reflectors being fixed on

said first piezoelectric component, one of said reflectors being partially transparent; a first active gas disposed inside the first cavity; and means for exciting the first active gas to obtain a continuous laser beam which passes through the partially transparent reflector;

a second gas laser generator comprising two reflectors disposed to form a second optical resonant cavity, a second piezoelectric component made of a piezoelectric substance provided with electrodes so as to cause the length of the cavity to vary by applying a variable voltage to said electrodes, one of said two second gas laser generator reflectors being fixed on said second piezoelectric component, both reflectors of the second gas laser generator being partially transparent; a second active gas disposed inside the second optical resonant cavity; and means for exciting the second active gas to obtain pulse radiation which passes through the reflectors of the second cavity;

means for causing at least part of the energy of the continuous laser beam to pass through the second cavity;

means for applying a biasing voltage to the electrodes of the first piezoelectric component so as to keep the frequency of the continuous laser beam constant; and

means for applying a biasing voltage to the electrodes of the second piezoelectric component so as to stabilize the frequency of said pulse radiation; and

wherein the gas laser assembly further includes a support formed by a single block of homogenous solid material whose coefficient of expansion is low, said support including two plane surfaces which are parallel to each other and on which are fixed firstly the first and second piezoelectric components which are respectively integral with two reflectors of said first and second cavities and secondly the other reflectors of said cavities, the first and second piezoelectric components being identical to each other so that the length of the first cavity is equal to that of the second cavity; and wherein said means for applying a bias voltage on the electrodes of the second piezoelectric component comprise means for connecting the electrodes of the first piezoelectric component in parallel with those of the second piezoelectric component.

4,375,686

SEMICONDUCTOR LASER

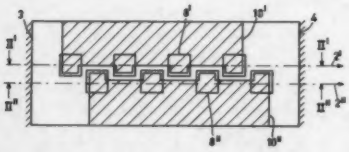
Peter J. de Waard, Eindoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1980, Ser. No. 212,376

Claims priority, application Netherlands, Dec. 13, 1979, 7908969

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 **14 Claims**



1. A semiconductor laser having a semiconductor body comprising a strip-shaped active region situated within a resonator, in which radiation is emitted in the longitudinal direction of the strip-shaped active region and in which a number of p-n-junctions are electrically connected in parallel to inject charge carriers into the active region, the strip-shaped active region forming part of an active semiconductor layer of a first conductivity type and having a plurality of spaced-apart zones of the second conductivity type within which radiation is generated, said zones being electrically connected to an electrode provided on a surface of the semiconductor body, that part of the active layer of the first conductivity type between the zones of the second conductivity type having a band spacing which is at least equal to that of the zones, and the largest dimension of said zones, viewed in the longitudinal direction of the strip-shaped active region, being at most equal to 20 μm, so that, upon ageing, crystal defects in any one of said zones will not extend beyond said zone.

4,375,687

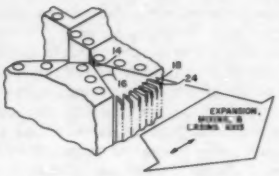
HYPERSONIC WEDGE NOZZLE FOR CHEMICAL LASERS

Dale L. Hook; John Waypa, both of Rancho Palos Verdes, Calif., and Theodore A. Jacobs, Annandale, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 29, 1980, Ser. No. 220,474

Int. Cl.³ H01S *3/02*

U.S. Cl. 372—58 **2 Claims**



1. A hypersonic wedge nozzle for chemical lasers comprising a housing having a chamber therein and means for introducing a fluorine gas bearing stream into said chamber, a two-dimensional expansion nozzle leading from said chamber and having oppositely diverging walls, each of said walls having a width in the direction of flow through said two-dimensional expansion nozzle and a length which is perpendicular to said width, and a multiplicity of hypersonic secondary injection tubes mounted at the outlet defined by said walls and said tubes being positioned longitudinally of said walls, spaced from said walls and in the expanding area of said two-dimensional expansion nozzle, and said tubes having passages therein for injecting H_2 or D_2 for the chemical laser and being wedge-shaped from a front portion to a rear portion which contains said passages for injecting said H_2 or D_2, whereby an arrangement is provided for causing a resulting flow downstream of said tubes which retains greater velocity and total pressure when fluid flows through the arrangement and an arrangement in which the increase in static temperature brought about by viscous drag is restricted to a much smaller region of the flow field when fluid flows through said arrangement.

4,375,688

GAS LASER TUBE

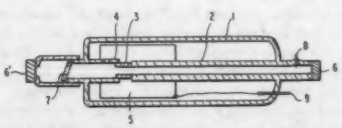
Noboru Taguchi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1980, Ser. No. 192,957

Claims priority, application Japan, Oct. 1, 1979, 54-136099[U]

Int. Cl.³ H01S *3/03*

U.S. Cl. 372—65 **9 Claims**



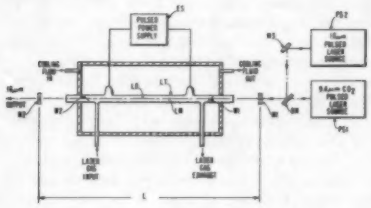
1. A gas laser tube comprising:

an envelope containing an active gaseous medium;
a laser capillary tube having one end connected to an end wall of said envelope;
a protrusion tube coaxially extending from an opposite end wall of said envelope opposite the end wall where the capillary tube is fixed, said protrusion tube overlapping a free end of said laser capillary tube; and
a coil spring member interposed between said free end of said laser capillary tube and said protrusion tube so as to make contact with both of said tubes so as to support said free end of said laser capillary tube.

4,375,689
OPERATION OF A TWO-PHOTON THREE LEVEL LASER

Lyle H. Taylor, Murrysville, and William H. Kasner, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 10, 1980, Ser. No. 195,906
Int. Cl.³ H01S *3/091*
U.S. Cl. 372—70 **1 Claim**



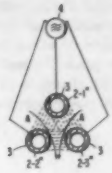
1. A method for improving the performance of a two-photon, three level laser system including a laser medium disposed within a laser discharge region wherein lasing occurs at two wavelengths with the lower laser level of the first lasing transition being the upper laser level of the second lasing transition, comprising the step of:
reducing the buildup time of the laser flux of the second transition by biasing the initial intensity buildup for said second lasing transition to a predetermined intensity level by externally providing radiation to the laser medium of said laser system at said second wavelength thereby reducing the time required to develop the necessary laser flux for said second lasing transition.

4,375,690
MULTI-PHASE SILENT DISCHARGE GAS LASER APPARATUS

Norikazu Tabata; Shigenori Yagi; Takanori Ueno, and Shuji Ogawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1980, Ser. No. 206,606
Claims priority, application Japan, Nov. 21, 1979, 54-150891
Int. Cl.³ H01S *3/09*
U.S. Cl. 372—82 **11 Claims**

1. A silent discharge gas laser apparatus, comprising:
(a) means defining a laser resonator,
(b) means for establishing a flow of gas in said resonator,
(c) at least three electrodes arranged in axial symmetry with respect to a laser radiation axis of said resonator,
(d) a multi-phase high frequency power source for generating voltage signals of at least three phases, and

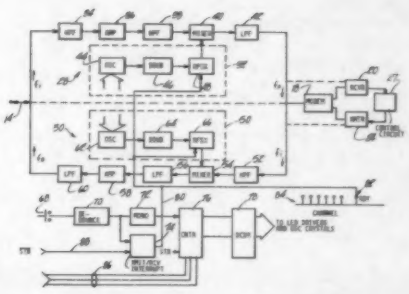


(e) means for applying said voltage signals across the electrodes.

4,375,691
METHOD AND DEVICE FOR FREQUENCY TRANSLATION

Brian K. Hackett, Ypsilanti, Mich., assignor to Minnesota Mining & Manufacturing Co., Saint Paul, Minn.

Filed Sep. 26, 1980, Ser. No. 191,208
Int. Cl.³ H04B *3/50*
U.S. Cl. 375—8 **18 Claims**



1. In a digital communications system including a plurality of master stations communicating with a plurality of terminals over a communications line carrying a plurality of communications channels each associated with one of said master stations, each of said terminals including a receiver and a transmitter operating on predetermined frequencies, a modem and means responsive to a request from any of the master stations for transmitting data information to that master station, each of said master stations including means for synchronously polling the terminals and for periodically delivering a resynchronizing signal to each of the terminals to synchronize the latter, a frequency translator for use with each of said terminals comprising:
first frequency translator means for translating the frequency of a selected one of said plurality of channels to the frequency of the terminal's receiver, including:
(1) multiple frequency oscillator means for producing a plurality of translation frequencies each associated with one of said channels, and
(2) means for mixing each of said translator frequencies with the frequency of the corresponding channel;
second translator circuit means for translating the frequency of the terminal's transmitter to the frequency of the selected channel, including:
(1) multiple frequency oscillator means for producing a plurality of translator frequencies each associated with one of said channels, and
(2) means for mixing each of said last named translation

frequencies with the frequency of the corresponding channel,

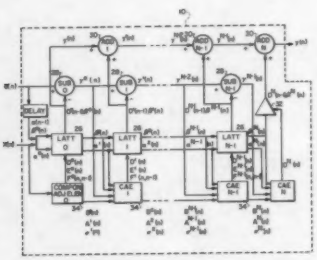
said first and second frequency translator circuit means being coupled between the modem of the associated terminal and said communications line; and

selectively operable channel select means operably coupled with said first and second translator circuit means for selecting one of said channels to place the terminal in communication with the master station corresponding to said one channel.

4,375,692
LEAST SQUARES LATTICE DECISION FEEDBACK EQUALIZER

Mark J. Shensa, San Diego; Edgar H. Satorius, Long Beach, and James D. Pack, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1981, Ser. No. 259,130
Int. Cl.³ H04L *25/03*
U.S. Cl. 375—13 **9 Claims**



1. An improved apparatus for equalizing signals and coupled to a data transmission channel comprising:

a plurality of successively coupled least squares lattice stages, the first of which is coupled to receive the output from the channel and each having a selected configuration of adjustable electrical components;

means for generating sequences of transmitted training signals for transmission therethrough;

means for generating sequences of undistorted training signals being substantially the same as the transmitted training signals;

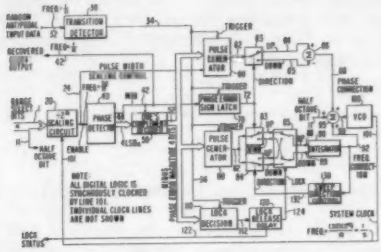
error generating means coupled to each of the least squares lattice stages and to the undistorted training signal generating means for providing a succession of error terms, each being an accumulation of error quantities, representing the difference between the undistorted training signals, received by said error generating means, and the transmitted training signal after it has traveled through the data transmission channel and been received by the first one of the least squares lattice stages; and

a component adjust means coupled in each least squares lattice stage and the preceding error generating means for iteratively adjusting the electrical components of its least squares lattice stage in accordance with an auto regressive moving average model of the transmission channel procedure, the interconnected preceding error generating means providing an error term which is within a prespecified limit when the electrical components are iteratively adjusted in response to the final training signal in the sequence.

4,375,693
ADAPTIVE SWEEP BIT SYNCHRONIZER

William B. Kuhn, Conyers, Ga., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Apr. 23, 1981, Ser. No. 257,011
Int. Cl.³ H03L *7/06*
U.S. Cl. 375—120 **6 Claims**



1. A bit synchronizer for generating a recovered clock output in synchronization with an input data stream containing random antipodal data, comprising:

phase detector means for measuring phase differentials between transitions within said input data stream and said recovered clock, said detector means having a first input coupled to the input data bit stream, and two outputs, i.e., a phase error signal and the recovered clock;

means for monotonically varying the frequency of said recovered clock over a preselected range prior to synchronization, said varying means having a first input coupled to the phase error signal and an output coupled to a second input of the phase detector means; and

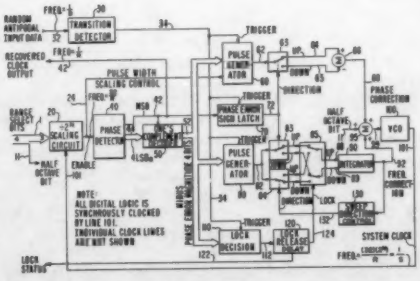
means for deciding when said input data stream and said recovered clock are in synchronization, said deciding means having a first input coupled to the input data stream, a second input coupled to the phase error signal, and an output coupled to a second input of the varying means;

wherein the varying means has a third input coupled to the input data stream, and the rate of varying the frequency of the recovered clock depends upon the data rate and transition density of the input data stream.

4,375,694
ALL RATE BIT SYNCHRONIZER WITH AUTOMATIC FREQUENCY RANGING

William B. Kuhn, Conyers, Ga., assignor to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Apr. 23, 1981, Ser. No. 257,012
Int. Cl.³ H03L *7/06*
U.S. Cl. 375—120 **6 Claims**



1. A bit synchronizer for generating a recovered clock in

synchronization with a random antipodal input data bit stream, comprising:

phase detector means for measuring phase differentials between transitions within said input data bit stream and said recovered clock, said detector means having a first input coupled to the input data bit stream, and two outputs, i.e., a phase error signal and the recovered clock;

means for adjusting the frequency of the recovered clock in response to the phase error signal, said adjusting means having an input coupled to the phase error signal and an output system clock coupled to a second input of the detector means via a variable frequency scaling means for selectively determining one frequency subrange of operation of the synchronizer during a first phase of operation prior to synchronization and during a second phase of operation subsequent to synchronization;

wherein the scaling means has an input coupled to the system clock and an output coupled to a second input of the detector means for changing the frequency of signals therewithin;

wherein said determined frequency subrange is one of a set of at least two subranges, where no subrange can be nested within any other subrange.

4,375,695

DEVICE FOR DETERMINING THE DENSITY DISTRIBUTION IN AN OBJECT

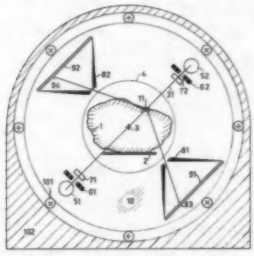
Geoffrey Harding, Rellingen, and Wolfgang Wagner, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,740

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944147

Int. Cl.³ A61B 6/00; G01T 1/29

U.S. Cl. 378—006 **9 Claims**



1. In a device for determining the density distribution in an object which comprises:

radiation source means for generating a narrow primary beam which irradiates the object;

detector means arranged adjacent the primary beam for detecting scattered radiation produced in the object by the primary beam;

diaphragm means arranged between the object and the detector means which function to collimate the scattered radiation so that the detector means measure a set of scattered radiation values from the path of the primary beam in the object; and

drive means for displacing the path of the primary beam through the object;

the improvement wherein the device further comprises:

support means which define a free space around the object and which are rotatable about an axis which intersects the path of the primary beam and is directed transverse thereto;

wherein the drive means function to rotate the support means about the axis; and

wherein the radiation source means and the diaphragm means are mounted on and rotate with the support means.

4,375,696

METHOD OF DETERMINING THE BODY CONTOUR FOR THE RECONSTRUCTION OF THE ABSORPTION OF RADIATION IN A FLAT ZONE OF A BODY

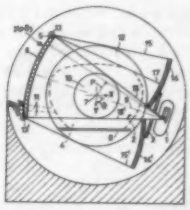
Wolfgang Wagner, Bookholtstwiete 11, 2000 Hamburg 63, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,580

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901406

Int. Cl.³ G03B 41/16

U.S. Cl. 378—20 **4 Claims**



1. In computed tomography, a method of determining the contour of a body in a plane, said body being positioned on an examination table and further being contained within a positioning zone in the plane, comprising the steps of;

completely irradiating an examination zone, which is situated within the positioning zone, from a plurality of different directions in the plane of examination with primary radiation which passes through the body along a plurality of beam paths and measuring the radiation transmitted through the body to determine primary radiation absorption values along each of said beam paths;

irradiating the positioning zone in a region which adjoins the examination zone and is tangent to the perimeter of the positioning zone; from a plurality of directions in the plane with auxiliary radiation which is substantially absorbed by the body;

measuring the auxiliary radiation with auxiliary detectors to determine the position of auxiliary radiation beams which are tangent to the body;

determining the position of contour points of the body from the position of said auxiliary radiation beams which are tangent to the body; wherein, as an improvement, the step of determining the position of contour points comprises:

determining the position of a plurality of first contour points from the position of auxiliary radiation beams which are tangent to the body and do not pass through the examination table;

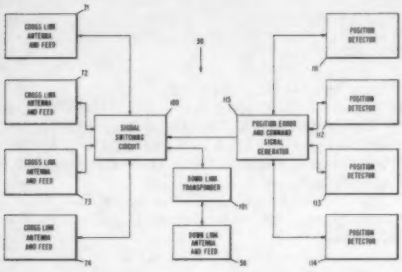
determining the position of further contour points by calculating the distance between a further contour point and a first contour point as the quotient of the absorption value determined from the measurement of primary radiation along a beam path which passes through said first point and said further point divided by an assumed value of a mean absorption coefficient in the body.

4,375,697

SATELLITE ARRANGEMENT PROVIDING EFFECTIVE USE OF THE GEOSTATIONARY ORBIT

Paul S. Visher, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 4, 1980, Ser. No. 183,883
Int. Cl.³ H04B 7/19
U.S. Cl. 455—13 8 Claims



8. A satellite squadron arrangement comprising:

a plurality of controllably maneuverable satellites adapted to be disposed in a predetermined orbit, said satellites being grouped in assigned positions relative to each other to form a cluster of satellites in a predetermined formation, at least one of said satellites being a control satellite;

communications cross link means disposed on said satellites for providing intercommunication therebetween;

means for developing error signals at said control satellites indicative of deviations of said satellites from their assigned positions in said predetermined formation; and

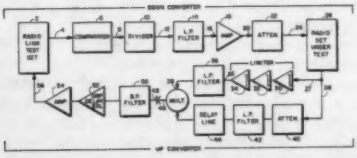
means disposed on said control satellite and responsive to said last-named means for developing command signals for transmission over said communications cross link means to controllably maneuver said satellites to correct for said deviations and maintain said satellites in said positions in said predetermined formation.

4,375,698

APPARATUS FOR TESTING MICROWAVE RADIOS HAVING 35 MHZ IF USING TEST EQUIPMENT DESIGNED FOR 70 MHZ IF

Larry Y. Onotera, Surrey, and Leonard Dueckman, Maple Ridge, both of Canada, assignors to AEL Microtel, Ltd., Burnaby, Canada

Filed Jul. 20, 1981, Ser. No. 285,223
Int. Cl.³ H04B 17/00
U.S. Cl. 455—67 7 Claims



1. Apparatus interposed between a standard radio link test set, which is designed to test radio sets having an IF bandwidth Δf centered at 70 MHz, and a radio set having an IF bandwidth $\Delta f/2$ centered at 35 MHz, so as to permit testing by the standard radio link test set, which comprises:

a down converter having an input terminal adapted to receive a 70 MHz sinusoidal test signal from the radio link test set and having an output terminal adapted for connection to the input of the radio set under test, said down converter comprising:

means to square up the sinusoidal signal from said radio link test set;

means for dividing the squared up signal to obtain a fundamental frequency of 35 MHz;

means for substantially reducing spurious frequencies present after the squaring and dividing of said sinusoidal signal to obtain a relatively harmonic-free 35 MHz test signal; and

means for adjusting the level of the test signal as required for the test to be performed to provide an adjusted level test signal at said output terminal; and

an up converter having input terminals adapted to receive output test signal from said radio set, and having an output terminal adapted for connection to an input terminal of said radio link test set, said up converter comprising:

means for multiplying said output test signal by itself without squaring the amplitude thereof so as to obtain a fundamental output frequency, $f_o = K'E_2(1+\cos 2\omega t)$, where K' is a constant of proportionality, E_2 being the amplitude of the output test signal and ω being the angular frequency;

means for conditioning the output signal from said multiplying means to substantially remove spurious frequencies and compensate for group delay; and

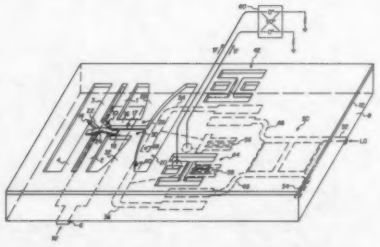
means for adjusting the amplitude of the signal output from said conditioning means to obtain a level equal to that at the up converter input terminals, and applying this level adjusted signal to the input terminal of said radio link test set.

4,375,699

MICROWAVE FREQUENCY CONVERTER WITH DUAL BALUN PORT

Ben R. Hallford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 13, 1981, Ser. No. 243,662
Int. Cl.³ H04B 1/26
U.S. Cl. 455—327 4 Claims



4. A frequency converter comprising, in combination:

a mixer for heterodyne modulation product signal generation;

a dual balun comprising two pairs of balanced secondary conductors juxtaposed a common primary conductor and forming two baluns;

means electrically connecting one end of a conductor of each of said pairs of balanced secondary conductors of said dual balun whereby the two baluns are electrically connected in series to form additive output impedances;

output means for said dual balun comprising electrical connections to an end of another conductor of each of said pairs of balanced secondary conductors of said dual balun; and

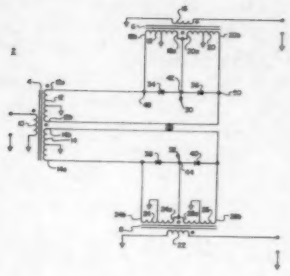
a pair of balanced conductors leading to said mixer from said output means of said dual balun.

4,375,700

LOW FREQUENCY CONVERTER WITH ISOLATED MIXER SECTIONS

Ben R. Hallford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 24, 1981, Ser. No. 286,413
Int. Cl.³ H04B 1/26
U.S. Cl. 455—330 5 Claims



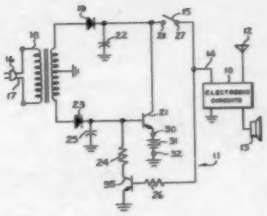
1. A frequency converter comprising, in combination:
first, second and third dual transformers, each having a primary winding and a pair of secondary windings; and
a four diode mixer, comprising a first and second isolated two diode sections, interconnecting said secondary windings for heterodyne modulation product signal generation, the first diode section comprises a first pair of diodes interconnecting the first secondary winding of said first transformer and the secondary windings of said second transformer, and the second diode section comprises a second pair of diodes interconnecting the secondary winding of said first transformer and the secondary windings of said third transformer.

4,375,701

BATTERY OR AC DRIVEN RADIO RECEIVER POWER SUPPLY

Raymond F. Hanson, Whitesboro, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,658
Int. Cl.³ H02J 9/06
U.S. Cl. 455—343 14 Claims



1. A power supply circuit for supplying power to an audio electronic circuit alternatively from an A.C. source or a battery comprising:
a switch having first and second terminals, said second terminal having means for coupling to said audio electronic circuit;
a first transistor having collector, base and emitter electrodes,
a contact for engaging a battery terminal being selectably coupled by said emitter and collector electrodes of said first transistor to said switch first terminal;
a first diode for coupling the switch first terminal to a means for supplying A.C. potential;
means coupled between said switch second terminal and said first transistor base for turning said first transistor fully on when said switch is closed.

DESIGNS

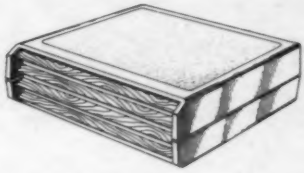
MARCH 1, 1983

268,064
NOVELTY HAT
Concetta M. Paterek, 170 Union Ave., Somerville, N.J. 08876
Filed Sep. 12, 1979, Ser. No. 74,782
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—248

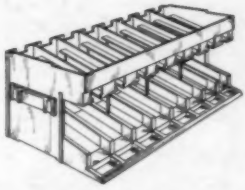
268,065
SHOE
Georg Spreng, Weiherstrasse 10, 7272 Altensteig, Fed. Rep. of Germany
Filed Dec. 30, 1980, Ser. No. 221,220
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1980, MR 632-NA
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

268,066
AUDIO CASSETTE HOLDER
Roland N. Walker, Rte. 1, Box 102, and Chris L. Wakefield, Rte. 1, Box 209-J, both of Rigby, Id. 83442
Filed May 31, 1979, Ser. No. 44,023
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35

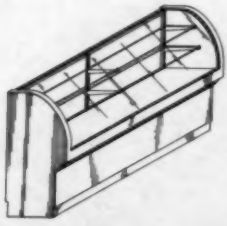
268,067
CASSETTE STORAGE FILE
George F. Lyman, Kennebunkport, Me., assignor to Data Packaging Corporation, Cambridge, Mass.
Filed Aug. 11, 1980, Ser. No. 176,843
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



268,068
DISPENSING RACK
Bernard Ellenson, Tenafly, N.J., and Milton Merl, New City, N.Y., assignors to Clairol Incorporated, New York, N.Y.
Filed Jun. 23, 1980, Ser. No. 161,843
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—130

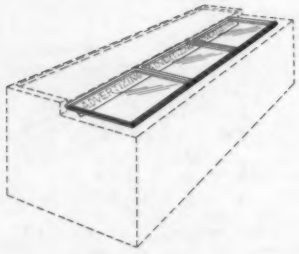


268,069
BULK CANDY DISPLAY CASE
Howard H. Milstein, 847 N. Broad St., Philadelphia, Pa. 19123
Filed Apr. 23, 1980, Ser. No. 143,090
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—173

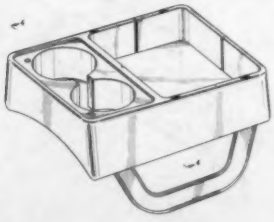


268,070
TABLE
Gabriella Crespi, Via Montenapoleone 2, Milan, Italy
Filed Apr. 21, 1980, Ser. No. 142,157
Claims priority, application Italy, Nov. 2, 1979, 23014/79[U]
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

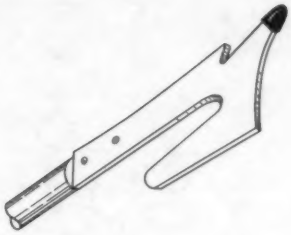
268,071
COMBINED DOOR AND ADVERTISING DISPLAY UNIT FOR A MERCHANDISING COOLER
David H. James, Roebuck, and Manuel F. Junco, Spartanburg, both of S.C., assignors to Tannetics, Inc., Erie, Pa.
Filed Aug. 15, 1980, Ser. No. 178,563
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—187



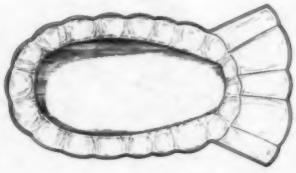
268,072
TRAY FOR A CHAIR ARM
Stanley D. Boggs, 8210 Sam Rayburn, #102, Austin, Tex. 78753
Filed Jul. 1, 1980, Ser. No. 165,198
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—199



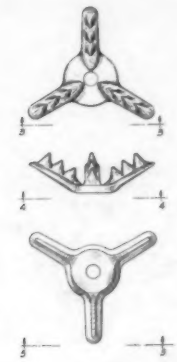
268,073
BED MAKING TOOL
Will Schaeffer, 802 W. Rozelle St., Rogers, Ark. 72756
Filed Jun. 23, 1980, Ser. No. 162,186
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D6—292



268,074
FOOD TRAY
Saul Burg, and Arthur M. Burg, both of Southfield, Mich., assignors to International Plastics, Inc., Royal Oak, Mich.
Filed Dec. 8, 1980, Ser. No. 214,064
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—5



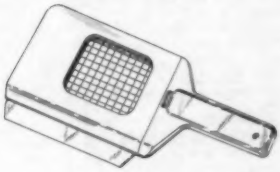
268,075
COMBINED COOKING AND/OR CARVING RACK FOR MEAT OR THE LIKE
William T. Pomeroy, Jr., East Liverpool, Ohio, assignor to The Sterling China Company, East Liverpool, Ohio
Filed Feb. 17, 1981, Ser. No. 234,984
Term of patent 14 years
Int. Cl. D07—*04, 02*
U.S. Cl. D7—70



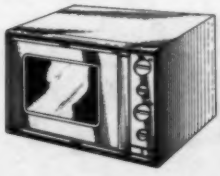
268,076
INSULATING HOLDER FOR A BOTTLE
Rudy Dean, P.O. Box 1844, Townsville, Queensland, Australia (4810)
Filed Nov. 12, 1980, Ser. No. 206,033
Claims priority, application Australia, Jun. 4, 1980, 81,112
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—70

268,077
STIRRER OR SIMILAR ARTICLE
Andre Morin, Dollard des Ormeaux, Canada, assignor to Les Industries Provinciales Limitee/Provincial Industries Ltd., Comte Bellechasse, Canada
Filed Mar. 12, 1981, Ser. No. 243,210
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—102

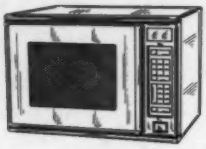
268,078
COMBINED VEGETABLE SLICER AND CURLER
Robert F. Kean, Sydney, Australia
Filed Jul. 31, 1980, Ser. No. 174,110
Claims priority, application Australia, Feb. 1, 1980, 80136
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—106



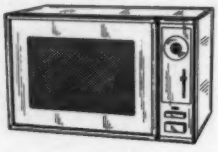
268,079
MICROWAVE OVEN
Takao Miyake; Masayoshi Kawaishi, and Masafumi Numano, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 30, 1980, Ser. No. 173,861
Claims priority, application Japan, Feb. 4, 1980, 55-3696
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351



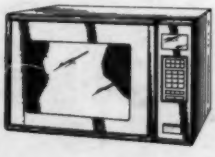
268,080
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1980, Ser. No. 219,590
Claims priority, application Japan, Jul. 9, 1980, 55-27766
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351



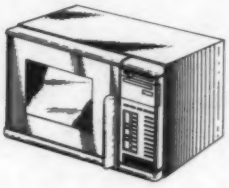
268,081
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1980, Ser. No. 219,592
Claims priority, application Japan, Jul. 9, 1980, 55-27769
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351



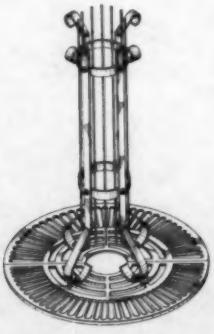
268,082
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1980, Ser. No. 219,593
Claims priority, application Japan, Jul. 9, 1980, 55/27767
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351



268,083
MICROWAVE OVEN
Yoshitsugu Hirose; Hiroshi Moritani, and Masakazu Sugiyama, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 4, 1981, Ser. No. 260,429
Claims priority, application Japan, Nov. 19, 1980, 55-48545
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351

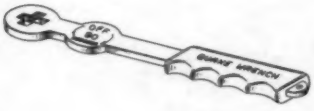


268,084
COMBINATION GUARD AND GRATE THEREFOR
Robert E. Haggard, Everett, Wash., assignor to Merry Haggard, Snohomish, Wash.
Filed Jun. 12, 1980, Ser. No. 158,937
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—01



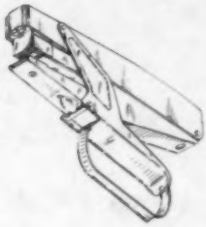
268,085
PUTTY KNIFE
Gene Brunson, 631 White St., and Paul Douglas, 934 Carrie St., both of Walla Walla, Wash. 99362
Filed Jul. 15, 1980, Ser. No. 169,131
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

268,086
GAS VALVE WRENCH
Carlton H. Waters, Jr., 721 Rancho Dr., Long Beach, Calif. 90815
Filed Dec. 1, 1980, Ser. No. 211,685
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—17

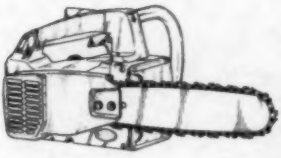


268,087
GAS VALVE WRENCH
William P. Truefitt, 15429 Lull St., Van Nuys, Calif. 91406
Filed Sep. 2, 1980, Ser. No. 183,048
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—28

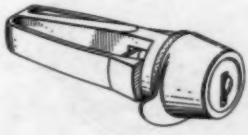
268,088
STAPLING PLIER
Michael Bass, North Plainfield, N.J., assignor to The Bates Manufacturing Company, Hacketstown, N.J.
Filed Nov. 3, 1980, Ser. No. 203,129
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D8—50



268,089
CHAIN SAW
Masatoshi Sato, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed May 19, 1980, Ser. No. 150,950
Claims priority, application Japan, Feb. 20, 1980, 55-5768
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—65



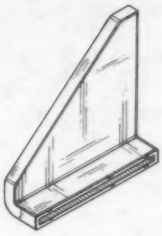
268,090
GAS TANK FILLER NECK LOCK
Donald J. Shanklin, Fullerton, Calif., assignor to Superior Industries International, Inc., Van Nuys, Calif.
Filed Sep. 11, 1980, Ser. No. 186,504
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331



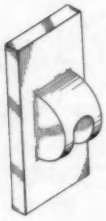
268,091
VERTEBRA FOR RECREATIONAL VEHICLE AND MOBILE HOME HOSE SUPPORT
Robley H. Baldwin, P.O. Box 13286, South Lake Tahoe, Calif. 95702
Filed Jul. 30, 1979, Ser. No. 62,008
Term of patent 14 years
Int. Cl.[3] D8—*08*
U.S. Cl. D8—356

268,092
POLY-V PULLEY
Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Doko Yosetsu-Sho, Japan
Filed Apr. 8, 1981, Ser. No. 252,496
Claims priority, application Japan, Dec. 26, 1980, 55-54858
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D8—360

268,093
SHELF BRACKET
Stephen K. Wencal, Fayetteville; Lawrence Peabody, New York, and Theodore W. Schriever, Syracuse, all of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Jul. 15, 1980, Ser. No. 169,061
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—381



268,094
LEVELING WASHER
Mark Radmaker, Spokane, Wash., assignor to Gifford-Hill & Company, Inc., Spokane, Wash.
Filed Sep. 7, 1979, Ser. No. 73,238
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399

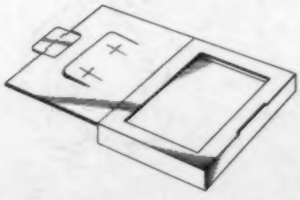


268,095
PEGBOARD HOOK GUARD
Stanley J. Valiulis, and Richard D. Barnes, both of Rockford, Ill., assignors to Southern Imperial, Inc., Tupelo, Mich.
Filed Sep. 19, 1980, Ser. No. 188,695
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—499

268,096
BOTTLE OR SIMILAR ARTICLE
John J. Austin, Jr., Elkhart, Ind.; Robert L. Dickens, Oak Park, and Albert Yochim, Villa Park, both of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Dec. 12, 1980, Ser. No. 215,812
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—333

268,097
COMBINED BOTTLE AND CAP
Donald V. R. Thompson, New York, N.Y., assignor to Newburgh Cosmetic Packaging Corporation, Newburgh, N.Y.
Filed May 23, 1980, Ser. No. 152,658
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—377

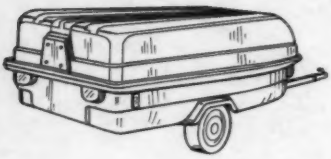
268,098
CONTAINER FOR A CASSETTE BOX OR THE LIKE
Raymond Brown, Crawley, England, assignor to Garrod & Lofthouse Limited, London, England
Filed Oct. 23, 1979, Ser. No. 87,640
Claims priority, application United Kingdom, Apr. 24, 1979, 989633/79
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418



268,099
TEMPERATURE SENSING STRIP
Karl E. A. Axelsson, Sondra Sandby, Sweden, assignor to Craftou Medical AB, Sweden
Filed Oct. 6, 1980, Ser. No. 194,409
Claims priority, application Sweden, Apr. 15, 1980, 778/80
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57

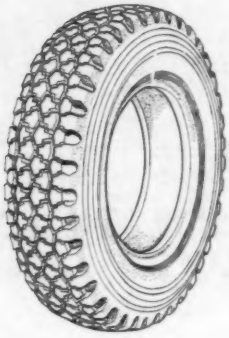
268,100
NECKLACE
David Pederson, 7128 Marshall St., Hammond, Ind. 46323
Filed Apr. 18, 1980, Ser. No. 141,656
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—7

268,101
COMBINATION BOAT, CAMPER, AND UTILITY TRAILER
Owen H. Pope, 163 Lincoln St., and David W. Gibbard, 2519 Bowers Rd., both of Lapeer, Mich. 48446
Filed Apr. 14, 1980, Ser. No. 140,106
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—104



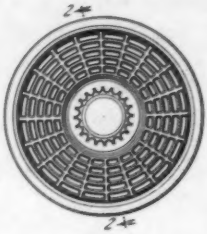
268,102
TIRE FOR A VEHICLE WHEEL
Michael C. Clatworthy, Whittington, and William P. S. Mack, Harborne, both of England, assignors to Dunlop Limited, London, England
Filed Aug. 4, 1980, Ser. No. 174,580
Claims priority, application United Kingdom, Mar. 13, 1980, 994053
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—140

268,103
TIRE FOR A VEHICLE WHEEL
Michael R. Corner, Coventry, England, assignor to Dunlop Limited, London, England
Filed May 6, 1980, Ser. No. 147,114
Claims priority, application United Kingdom, Dec. 22, 1979, 992991
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

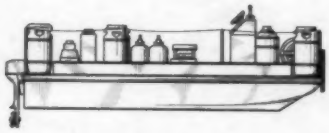


268,104
CONTINUOUS SNOW CHAIN
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
Filed Aug. 2, 1979, Ser. No. 63,350
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—154

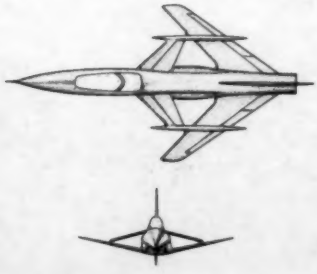
268,105
VEHICLE WHEEL COVER
John R. Schinella, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 1, 1980, Ser. No. 174,507
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



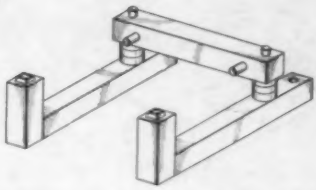
268,106
MARITIME MAINTENANCE VESSEL OR THE LIKE
Jerrold C. Feiger, 11820 Mayfield Ave., Los Angeles, Calif. 90049, and Ben Braunstein, 1102 Raintree Cir., Culver City, Calif. 90230
Filed Jul. 2, 1979, Ser. No. 54,279
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—310



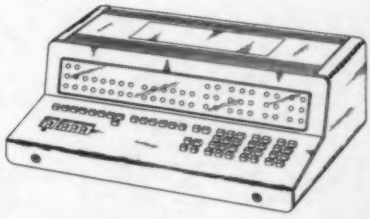
268,107
AIRCRAFT
Abraham Enav, Elmont, and Gordon Rosenthal, Jericho, both of N.Y., assignors to Fairchild Industries, Inc., Germantown, Md.
Filed Apr. 25, 1980, Ser. No. 143,672
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—331



268,108
SPEAKER STAND
Kenneth W. Stearns, 9009 Cedel, and Vance L. Phenix, 1225 Ridgeley Dr., both of Houston, Tex. 77055
Filed Dec. 5, 1980, Ser. No. 213,494
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—38

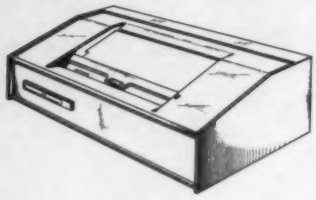


268,109
OPERATOR CONSOLE OF A TELEPHONE SWITCHING SYSTEM
Daniel Richelet, Vence, and Gilbert Pedinielli, Nice, both of France, assignors to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 29, 1979, Ser. No. 70,775
Claims priority, application France, Mar. 9, 1979, 79 42271
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58

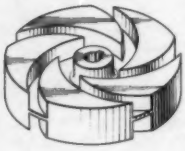


268,110
TELEVISION MONITOR
John M. Coutta, 450 Superior Ave., Decatur, Ga. 30030
Continuation-in-part of Ser. No. 722,081, Sep. 10, 1976, abandoned. This application Jun. 9, 1980, Ser. No. 157,542
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—77

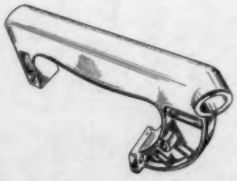
268,111
PRINTER
Anton H. Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Jul. 18, 1980, Ser. No. 169,971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—111



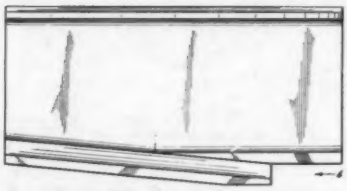
268,112
IMPELLER FOR CENTRIFUGAL PUMPS OR SIMILAR ARTICLE
Eiichi Suglura, 149, Matsumotocho, Hekinan-shi, Aichi-ken, Japan
Filed Apr. 1, 1980, Ser. No. 136,274
Claims priority, application Japan, Nov. 10, 1979, 54-47139
The portion of the term of this patent subsequent to Mar. 17, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



268,113
HANDLE FOR A PORTABLE BAG CLOSING SEWING MACHINE
David B. Johnson, and Verdell H. Schroeder, both of Minneapolis, Minn., assignors to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.
Filed Feb. 11, 1980, Ser. No. 120,378
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—72

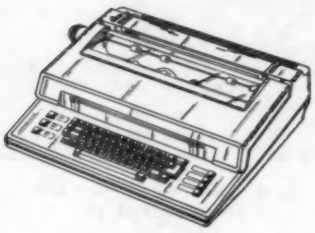


268,114
IMPELLER WHEEL BLADE FOR AN ABRASIVE BLASTING MACHINE
William G. G. Tutton, Belper, England, assignor to Auto Alloys R & D Limited, Derbyshire, England
Filed May 13, 1980, Ser. No. 149,552
Claims priority, application United Kingdom, Nov. 13, 1979, 992343
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126

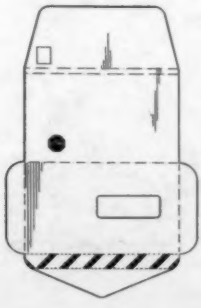


268,115
STRINGED INSTRUMENT
Julio P. Montalvo, Arecibo, P.R., assignor to Commonwealth of Puerto Rico, San Juan, P.R.
Filed Aug. 11, 1980, Ser. No. 176,772
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

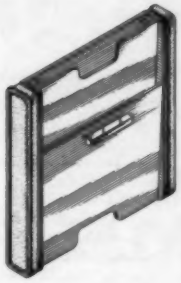
268,116
TYPEWRITER
Klaus D. Krause, Oberasbach, and Bernd Gubbe, Nürnberg-Katzwang, both of Fed. Rep. of Germany, assignors to Triumph Werke Nurnberg A.G., Nuremberg, Fed. Rep. of Germany
Filed Aug. 4, 1980, Ser. No. 175,427
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 2139/0380
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1



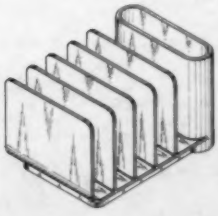
268,117
ENVELOPE
Merrill Solomon, Potomac, Md., assignor to 21st Century Envelope Co. Inc., Deer Park, N.Y.
Filed Sep. 17, 1979, Ser. No. 76,418
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D19—3



268,118
COMBINED CALENDAR, MEMO AND PENCIL HOLDER
Francis V. Herr, Kenmore; Thomas B. Walklet, East Amherst, both of N.Y.; James G. Hansen, Winnetka, and Theodore J. Hasler, Chicago, both of Ill., assignors to McDonald Products Corporation, Buffalo, N.Y.
Filed Dec. 24, 1980, Ser. No. 220,107
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—22



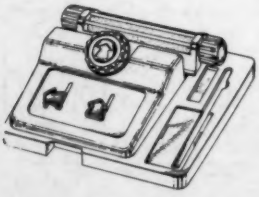
268,119
COMBINED SORTING RACK AND WRITING INSTRUMENT HOLDER
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed Nov. 10, 1980, Ser. No. 205,701
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77



268,120
BUMPER STICKER
Daniel Kleiner, Leipartstrasse 12, D-8000 Munich 70, Fed. Rep. of Germany
Filed May 18, 1981, Ser. No. 264,452
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 12329
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—11

268,121
TOY VEHICLE OR SIMILAR ARTICLE
John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143, and John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106
Filed Dec. 4, 1980, Ser. No. 212,848
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74

268,122
TOY TYPEWRITER WITH INTEGRAL PLATFORM
John A. Chambers, Bingham, England, assignor to Dobson Park Industries Limited, Nottingham, England
Filed May 28, 1980, Ser. No. 154,105
Claims priority, application United Kingdom, Mar. 12, 1979, 992643
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—127



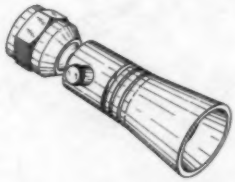
268,123
CLUB FOR A BALL AND CLUB GAME
Carl F. Dretzke, 777 Depot St., Rte. 2, Box 35, Manawa, Wis. 54949
Filed Nov. 6, 1980, Ser. No. 204,642
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—211

268,124
CLUB FOR A BALL AND CLUB GAME
Carl F. Dretzke, 777 Depot St., Rte. 2, Box 35, Manawa, Wis. 54949
Filed Nov. 6, 1980, Ser. No. 204,643
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—211

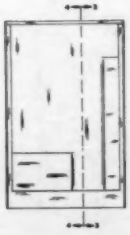
268,125
SKATE
Roger B. Baikie, Ville St. Laurent, Canada, assignor to Canpro Sport Inc., Montreal, Canada
Filed Jul. 3, 1980, Ser. No. 165,769
Claims priority, application Canada, Jan. 18, 1980, 16-01-80-4
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—225

268,126
ELECTRIC INSECT EXTERMINATOR
Meir Zeldov, Herzlia, and Mordechai Yavnieli, Ramat-Hasharon, both of Israel, assignors to Amcor, Ltd., Tel Aviv, Israel
Filed Dec. 3, 1979, Ser. No. 99,289
Claims priority, application Israel, Jul. 25, 1979, 7652
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19

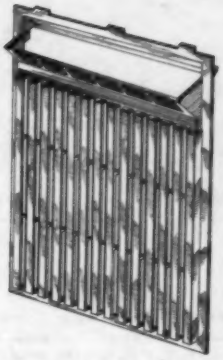
268,127
SHOWER HEAD
Wilbur W. Whedon, West Hartford, and Raymond T. Proulx, Wethersfield, both of Conn., assignors to Whedon Products, Inc., West Hartford, Conn.
Filed May 27, 1981, Ser. No. 267,698
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



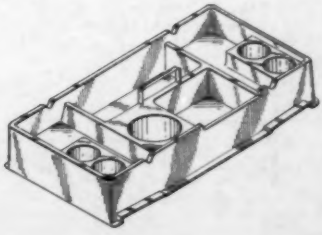
268,128
SHOWER STALL
James H. Ballard, 513 Bexar Ave., Hamilton, Ala. 35570
Filed Sep. 8, 1980, Ser. No. 185,361
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



268,129
FRONT PANEL FOR A DEHUMIDIFIER
Nicholas Zaback, Carteret, N.J., assignor to National Union Electric Corporation, Greenwich, Conn.
Filed May 19, 1980, Ser. No. 151,098
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

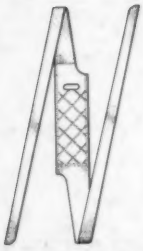


268,130
TRAY FOR VETERINARY SUPPLIES AND EQUIPMENT
Harlan J. Easton, R.R. 3, Blooming Prairie, Minn. 55917
Filed Jun. 27, 1980, Ser. No. 163,499
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—31



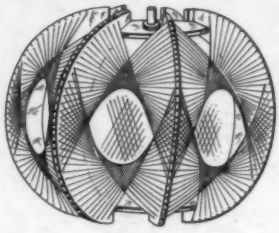
268,131
PIPETTE
Elmer F. St. Amand, 12744 Kahlenberg La., North Hollywood, Calif. 91607
Filed Jun. 13, 1980, Ser. No. 159,186
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—55

268,132
LIMB HOLDER
Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tecnol, Inc., Forth Worth, Tex.
Filed Sep. 5, 1980, Ser. No. 184,623
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D24—64

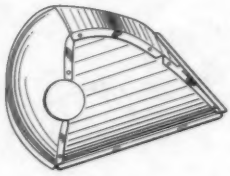


268,133
PLATFORM FOR SUPPORTING A LADDER ON STAIRS
Betty D. Drake, General Delivery, Shingletown, Calif. 96088
Filed Oct. 14, 1980, Ser. No. 196,937
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D25—68

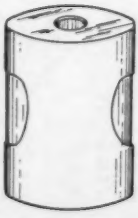
268,134
LUMINAIRE
Frederic Zurcher, 701 Willow La., Geneva, Ill. 60134
Continuation-in-part of Ser. No. 908,898, May 23, 1978, abandoned. This application Nov. 20, 1980, Ser. No. 208,790
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—91



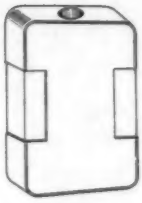
268,135
REFLECTOR
Bertil Hålbro, Lidingö, Sweden, assignor to Hålbros Patenter AB, Lidingö, Sweden
Filed Feb. 22, 1980, Ser. No. 123,883
Claims priority, application Sweden, Aug. 24, 1979, 79-1862
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—128



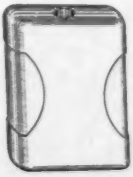
268,136
CIGAR AND CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A. (Sodire), Madrid, Spain
Filed Jun. 29, 1981, Ser. No. 278,386
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



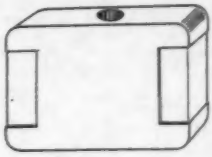
268,137
CIGAR AND CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A. (Sodire), Madrid, Spain
Filed Jun. 29, 1981, Ser. No. 278,575
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



268,138
CIGAR AND CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A. (Sodire), Madrid, Spain
Filed Jun. 29, 1981, Ser. No. 278,576
Term of patent 14 years
Int. Cl.[3] D27—*99*
U.S. Cl. D27—51

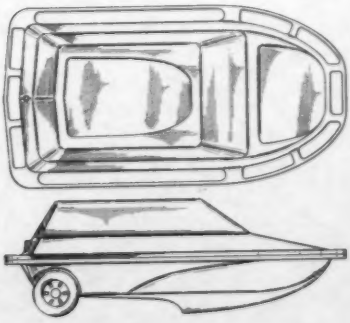


268,139
CIGAR AND CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A. (Sodire), Madrid, Spain
Filed Jun. 29, 1981, Ser. No. 278,578
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



268,140
MUSIC STAND CART OR SIMILAR ARTICLE
Wayne V. Tenner, Bloomington, Minn., assignor to Wenger Corporation, Owatonna, Minn.
Filed Aug. 13, 1980, Ser. No. 178,130
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—22

268,141
SCUBA GEAR TRANSPORT CARRIER
Douglas R. Miller, 8877 Lauderdale Ct.-G210, Huntington Beach, Calif. 92646
Filed Dec. 7, 1979, Ser. No. 101,120
Term of patent 14 years
Int. Cl. D12—*02*; D3—*02*
U.S. Cl. D34—25



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF MARCH, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See*—
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A. T. Ramot Plastics Ltd.: *See*—
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Abbott Laboratories: *See*—
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Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., to Rockwell International Corporation. Protected muldem with independent protective switching of circuits having different data rates. 4,375,682, Cl. 370-16.000.

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Abel, Edward P.; and Weissberger, Edward, to Eastman Kodak Company. Timing layers for color transfer assemblages containing positive-working redox dye-releasers and development accelerators. 4,375,506, Cl. 430-215.000.

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Noll, R. W., 4,375,224, Cl. 137-486.000.

Adams, Richard C.; and Herold, Albert J., to Standard Oil Company, The. Method for producing sintered porous polymeric articles. 4,375,441, Cl. 264-25.000.

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Onotera, Larry Y.; and Dueckman, Leonard, 4,375,698, Cl. 455-67.000.
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Coe, Charles G., 4,375,559, Cl. 564-312.000.
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Allegheny Ludlum Steel Corporation: *See*—
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Allied Corporation: *See*—
Miller, Granville G.; Ivory, Dawn M.; Shacklette, Lawrence W.; Chance, Ronald R.; Elsenbaumer, Ronald L.; and Baughman, Ray H., 4,375,427, Cl. 252-512.000.
Nalewajek, David; Recla, Eugene B.; Wiles, Robert A.; and Eibeck, Richard E., 4,375,453, Cl. 423-21.100.

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Murdock, Keith C., 4,375,469, Cl. 424-244.000.

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Goldberg, Thomas R., 4,375,631, Cl. 338-128.000.
Staley, Darrell S., 4,375,653, Cl. 358-229.000.

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Muller, Friedrich-E.; Oesterwind, G. Wolfgang; and Nothdurft, Jurgen, 4,375,366, Cl. 55-416.000.

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Arnal, Claude. High speed wire brushes. 4,375,114, Cl. 15-21.00D.

Arnold, James M., to Communications Technology Corporation. Vegetable oil extended polyurethane systems. 4,375,521, Cl. 523-173.000.

Arrendale, Hubert G., Jr.: *See*—
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Atlantic Richfield Company: *See*—
Yudovich, Amos, 4,375,570, Cl. 585-410.000.

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Wensley, John H., 4,375,683, Cl. 371-36.000.

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Sehgal, Surendra N.; and Vezina, Claude, 4,375,464, Cl. 424-122.000.

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B. F. Goodrich Company, The: *See*—
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Bachtiger, Urs, to Hunter Douglas International N.V. Collar for an article of clothing. 4,375,107, Cl. 2-131.000.

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Baer, Massimo, to Monsanto Company. Multiphase core/shell polymers. 4,375,532, Cl. 525-310.000.

Bagli, Jehan F.; and Bogri, Tibor, to American Home Products Corporation. 2(1-Piperazinyl)-cycloheptimidazole antihypertensive composition and methods. 4,375,470, Cl. 424-250.000.

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Baker, Richard H., to Exxon Research and Engineering Co. Method of and apparatus for enabling output power of solar panel to be maximized. 4,375,662, Cl. 363-95.000.

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Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,375,270, Cl. 228-37.000.

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Barrall, Jeffery L., to Armstrong World Industries, Inc. Rigid, water-resistant phosphate ceramic materials and process for preparing them. 4,375,516, Cl. 501-84.000.

Barrington, Burchus Q.; and Nix, George J., to Halliburton Company. Acoustic subsea test tree and method. 4,375,239, Cl. 166-336.000.

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Barto, John A. Reciprocating thermal actuator with hydraulic multiplier. 4,375,152, Cl. 60-530.000.

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Battelle Development Corporation: *See*—
Genequand, Pierre; Hindi, Guy N.; Gross, Daniel; Pfeifer, Hermann; and Kalbkoph, Reinhard, 4,375,380, Cl. 156-72.000.

Baugh, John L.; Manderscheid, Phillip H.; and Montgomery, James W., to Hughes Tool Company. Well packer. 4,375,240, Cl. 166-387.000.

Baughman, Ray H.: *See*—
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Baum, Dean O.; and Dawson, James E., to J. I. Case Company. Bucket leveling mechanism. 4,375,344, Cl. 414-708.000.

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Bazzani, Fausto; and Sevini, Paolo, to Zanussi Elettromeccanica S.p.A. Control circuit for direction indicator lamps in vehicles with alternating current installations. 4,375,633, Cl. 340-73.000.

Beasley, Max M., to Tuftco Corporation. Cutting mechanism for cut pile tufting machine. 4,375,196, Cl. 112-79.00R.

Beatrice Foods Co.: *See*—
Kohler, Thomas P., 4,375,608, Cl. 315-307.000.

Beauchamp, Carl C. Jogging vehicle. 4,375,294, Cl. 280-87.02R.

Bechtiger, Charles G.; and Peyronnet, Jacques, to Sargent & Greenleaf, Inc. Changeable combination tumbler wheel type key lock. 4,375,159, Cl. 70-366.000.

Beck, Carl E. Mower blade. 4,375,148, Cl. 56-295.000.

Beckman Instruments, Inc.: *See*—
Sperry, Elmer A., III; and Legenhausen, Robert F., 4,375,170, Cl. 73-863.850.
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Begga, James M.; Green, Gordon; and Mattauch, Robert J., to United States of America, National Aeronautics and Space Administration. Thin wire pointing method. 4,375,396, Cl. 204-129.550.

Begnaud, John D.: *See*—
Harrison, Charles W.; Pitman, Herbert J.; Sequeira, Avilino, Jr.; and Begnaud, John D., 4,375,403, Cl. 208-33.000.

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Berg, David H.; and Hoehn, Marvin M., to Eli Lilly and Company. A-32724 Antibiotics and process for production thereof. 4,375,462, Cl. 424-117.000.

Berkowitz, Edward H., to Varian Associates, Inc. Feedback FIFO for cyclic data acquisition and instrument control. 4,375,676, Cl. 364-900.000.

Berner, George J.; and Frow, Robert M., to Hobart Corporation. Label printer. 4,375,189, Cl. 101-68.000.

Bernhardt, Richard P.; and Cowan, Everett C., Jr., to Sperry Corporation. Adjustable support for concaves. 4,375,221, Cl. 130-27.00S.

Berry, Milton E.; and Pariani, Ronald L., to Southwire Company. Method for melting a non-ferrous metal charge with liquid fuel. 4,375,352, Cl. 431-8.000.

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Berthold, Rudiger; and Muller, Werner H., to Hoechst Aktiengesellschaft. Process for the preparation of aromatic amines. 4,375,561, Cl. 564-415.000.

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Bird, Alfred J.; and Ferrier, Gordon G., to Johnson, Matthey & Co., Limited. Hydrogenation of halogen-substituted aromatic nitro compounds. 4,375,550, Cl. 560-47.000.

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Bradford, Marion M.; Orthoefer, Frank T.; and Wright, Kenneth N., to A. E. Staley Manufacturing Company. Aluminum treated proteins. 4,375,431, Cl. 260-123.500.

Braun, Joerg P.; and Fritz, Stefan, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Device for opening flanged joints. 4,375,161, Cl. 72-412.000.

Braun, John D., to United States of America, Navy. Thixotropic restrictor, curable at room temperature, for use on solid propellant grains. 4,375,522, Cl. 523-180.000.

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Brock, George W.; Hyland, Robert N.; Pawlowski, Edward J.; and Shelledy, Frank B. Magnetic head assembly. 4,375,657, Cl. 360-125.000.

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Burgdorf, Jochen, to ITT Industries, Inc. Spot-type disc brake. 4,375,250, Cl. 188-72.200.
Burke, John P.; and Young, Alastair J., to Automotive Products Limited. Automatic wear adjuster for drum brakes. 4,375,251, Cl. 188-79.50P.
Burroughs Corporation: *See*—
Greig, George H., 4,375,611, Cl. 318-626.000.
Kim, Dongsung R., 4,375,664, Cl. 364-200.000.
Butler, John D.: *See*—
Gudmestad, Ragnar; and Butler, John D., 4,375,186, Cl. 100-7.000.
Butler, William S., to Halliburton Company. Railcar transporting trailer. 4,375,343, Cl. 414-508.000.
Butzke, Jurgen: *See*—
Reiff, Fritz; Wintermeyer, Willi; Wittmann, Rolf; Butzke, Jurgen; and Muller, Peter, 4,375,393, Cl. 204-79.000.
Byatt, Stephen W., to U.S. Philips Corporation. Method of passivating pn-junction in a semiconductor device. 4,375,125, Cl. 29-588.000.
C.K.S. S.n.c.: *See*—
Giovanni, Chietti; and Selvi, Fabio, 4,375,267, Cl. 223-112.000.
C. P. Hall Company: *See*—
Kuceski, Vincent P., 4,375,552, Cl. 560-204.000.
Cahill, Richard F.; and Udd, Eric, to McDonnell Douglas Corporation. Optical acoustic sensor. 4,375,680, Cl. 367-149.000.
Calgon Corporation: *See*—
Zupanovich, John D.; Myers, John G.; and Walker, Jerry L., 4,375,526, Cl. 524-436.000.
Calundann, Gordon W.: *See*—
Hay, Ian L.; East, Anthony J.; and Calundann, Gordon W., 4,375,530, Cl. 524-605.000.
Canadian General Electric Co., Ltd.: *See*—
Howard, John F., 4,375,629, Cl. 337-159.000.
Canon Kabushiki Kaisha: *See*—
Suzuki, Ryoichi; Tokuda, Ryuji; and Hirohata, Michio, 4,375,321, Cl. 354-23.00D.
Tohyama, Yoshikuni; and Katsura, Akihiko, 4,375,331, Cl. 355-51.000.
Tsuchiya, Hiroaki; and Kurosaki, Yasuhide, 4,375,328, Cl. 355-14.00E.
Yokota, Hideo; and Hosoe, Kazuya, 4,375,332, Cl. 356-1.000.
Cardis, Angeline B., to FMC Corporation. Insecticidal (2,6-dimethyl-3-substituted phenyl)methyl cyclopropanecarboxylates. 4,375,476, Cl. 424-302.000.
Carlson, John H., to USM Corporation. One lobed motor. 4,375,602, Cl. 310-83.000.
Carlson, Lennart L.; and Hoiberg, Douglas I., to Steward Plastics, Inc. Two piece extruded hose. 4,375,381, Cl. 156-195.000.
Caroe, Claus J.: *See*—
Heescher, Felix; and Caroe, Claus J., 4,375,232, Cl. 160-84.00R.
Carruth, Carroll D., Jr.: *See*—
Gist, Larry B.; and Carruth, Carroll D., Jr., 4,375,582, Cl. 179-27.0FH.
Caterpillar Tractor Co.: *See*—
Koch, Keith E., 4,375,279, Cl. 242-156.000.
McNeely, Robert T., 4,375,247, Cl. 187-9.00R.
Catsimpoolas, Nicholas. Electrophoresis system. 4,375,401, Cl. 204-301.000.
Celanese Corporation: *See*—
Hay, Ian L.; East, Anthony J.; and Calundann, Gordon W., 4,375,530, Cl. 524-605.000.
Cernius, Roger K.: *See*—
Singer, Paul A.; and Cernius, Roger K., 4,375,620, Cl. 331-78.000.
Champion Spark Plug Company: *See*—
Green, Samuel J., 4,375,205, Cl. 123-179.00H.
Chan, Ka-Kong; and Pawson, Beverly A., to Hoffmann-La Roche Inc. Fluorinated aromatic polyenes. 4,375,563, Cl. 568-308.000.
Chance, Ronald R.: *See*—
Miller, Granville G.; Ivory, Dawn M.; Shacklette, Lawrence W.; Chance, Ronald R.; Elsenbaumer, Ronald L.; and Baughman, Ray H., 4,375,427, Cl. 252-512.000.
Chang, Shih H. Clipboard. 4,375,296, Cl. 281-45.000.
Chapman, Stuart R.; and Pollard, F. Ross, to Dearborn Chemical Company Limited. Water based fireside additive. 4,375,359, Cl. 44-51.000.
Chase, Gordon G.: *See*—
Elkins, Perry E.; Bell, Jerry E.; Harlow, Richard A.; and Chase, Gordon G., 4,375,127, Cl. 29-623.500.
Chatani, Yasushi, to Kawada Co., Ltd. Toy arrangement with independently rotatable wheel means. 4,375,139, Cl. 46-221.000.
Chemical Research & Licensing Co.: *See*—
Smith, Lawrence A., Jr., 4,375,576, Cl. 585-510.000.
Chemie Linz Aktiengesellschaft: *See*—
Wieser, Josef; and Krieger, Josef, 4,375,543, Cl. 544-165.000.
Chevron Research Company: *See*—
Santilli, Donald S., 4,375,406, Cl. 208-251.00H.
Chiang, John S. C., to FMC Corporation. Method of producing sodium aluminum phosphate. 4,375,456, Cl. 423-306.000.
Chitwood, Ralph, to Erberich, Betty Louise C.; Chitwood, Wilbur T.; and Chitwood, Robert W. Fishing lure holder. 4,375,137, Cl. 43-57.100.
Chitwood, Robert W.: *See*—
Chitwood, Ralph, 4,375,137, Cl. 43-57.100.
Chitwood, Wilbur T.: *See*—
Chitwood, Ralph, 4,375,137, Cl. 43-57.100.
Chotia, John P., deceased; and by Bowman, Susan M., personal representative. Free flight maneuvering toy airplane. 4,375,138, Cl. 46-79.000.
Chu, Pochen: *See*—
Dwyer, Francis G.; Chu, Pochen; and Cormier, William E., Jr., 4,375,458, Cl. 423-329.000.
Chung, Raymond, to Kimberly-Clark Corporation. Method for forming an air-laid web of dry fibers. 4,375,447, Cl. 264-518.000.
Chung, Raymond: *See*—
Appel, David W.; and Chung, Raymond, 4,375,448, Cl. 264-518.000.
Chung, Yun H., to International Automated Machinery, Inc. Continuous rotary machine and method for forming, filling, and sealing package of laminated sheet material. 4,375,146, Cl. 53-453.000.
Churchman, Ronald K., to Otis Engineering Corporation. Well equipment setting or retrieval tool. 4,375,237, Cl. 166-117.500.
Citizen Watch Co., Ltd.: *See*—
Kushida, Hachiro; Takasugi, Tsuneji; and Irie, Kenji, 4,375,391, Cl. 204-35.00N.
Clark, Alexander H.; O'Neil, John E.; and Tenney, Albert S., III, to Leeds & Northrup Company. Microprocessor directed optical pyrometer. 4,375,333, Cl. 356-47.000.
Clark, Faith D.: *See*—
Shuford, Charles E.; Clark, Faith D.; and Russell, Brenda J., 4,375,483, Cl. 426-330.600.
Clough, Philip J., to Ladlow Corporation. Process of making a dielectric product. 4,375,486, Cl. 427-121.000.
Coe, Charles G., to Air Products and Chemicals, Inc. Process for the production of hydrazoaromatics using a multi-phase system. 4,375,559, Cl. 564-312.000.
Cogan, Adrian I., to GTE Laboratories Incorporated. Power static induction transistor fabrication. 4,375,124, Cl. 29-571.000.
Cohen, Saul M.; and LeBlanc, John R., to Monsanto Company. Polymer compositions comprising acetals of adducts of acrolein and isocyanuric acid. 4,375,537, Cl. 528-230.000.
Cohen, Saul M.; and LeBlanc, John R., to Monsanto Company. Polymer compositions comprising adducts of acrolein and isocyanuric acid. 4,375,538, Cl. 528-230.000.
Cohnen, Wolfgang: *See*—
Idel, Karsten; Cohnen, Wolfgang; Freitag, Dieter; and Schlak, Ottfried, 4,375,525, Cl. 524-108.000.
Cole, Herald J.: *See*—
Debono, Manuel; Merkel, Kurt E.; Weeks, Robert E.; and Cole, Herald J., 4,375,513, Cl. 435-169.000.
Cole, Raymond; Kennedy, Raymond; and McCluskey, Lincoln, to International Playtex, Inc. Method for forming two-layer brassiere cup. 4,375,445, Cl. 264-250.000.
Colgate-Palmolive: *See*—
Harvey, Kenneth; Hayes, Harry; and Morton, Anthony J., 4,375,460, Cl. 424-52.000.
Collins, William C.: *See*—
Schneider, Irwin; Collins, William C.; Imber, Oscar; and Klein, Philipp H., 4,375,429, Cl. 252-584.000.
Combs, Elmer M., to B & C Enterprises. Diesel fuel tank having removable electric immersion heater assembly. 4,375,589, Cl. 219-315.000.
Communications Technology Corporation: *See*—
Arnold, James M., 4,375,521, Cl. 523-173.000.
Compagnie Generale D'Electricite: *See*—
Le Goff, Denis; and Guyot, Jean C., 4,375,685, Cl. 372-32.000.
Connors, Edward W.: *See*—
Lewis, Richard B.; Koehler, Richard F., Jr.; and Connors, Edward W., 4,375,673, Cl. 364-555.000.
Conoco Inc.: *See*—
Swartz, Charles J.; and Scott, William P., 4,375,358, Cl. 44-51.000.
Washecheck, Paul H.; Liu, Andrew T. C.; and Kennedy, E. Flynt, 4,375,360, Cl. 44-53.000.
Conrad, Robert A., to Eli Lilly and Company. Method of preparing vincristine. 4,375,432, Cl. 260-244.400.
Conrad, Ulrich. Bridoon bit. 4,375,147, Cl. 54-8.000.
Container Corporation of America: *See*—
Crayne, Jerry W.; Wolff, Natalie A.; and Botterman, David L., 4,375,258, Cl. 206-141.000.
Conway, John P. Hydraulic cylinder extending in three force modes. 4,375,181, Cl. 91-416.000.
Coppa, Richard J.; and Rodriguez, Marie T., to Polaroid Corporation. Full range variable proportional fill flash system. 4,375,322, Cl. 354-27.000.
Cordis Dow Corp.: *See*—
Geel, Zane H.; and Maroney, John, 4,375,413, Cl. 210-636.000.
Cormier, William E., Jr.: *See*—
Dwyer, Francis G.; Chu, Pochen; and Cormier, William E., Jr., 4,375,458, Cl. 423-329.000.
Corning Glass Works: *See*—
Herczog, Andrew, 4,375,503, Cl. 429-104.000.
Costa, Maurizio D. Cutting machine for triangle cutting sheets of pastry. 4,375,348, Cl. 425-305.100.
Cowan, Everett C., Jr.: *See*—
Bernhardt, Richard P.; and Cowan, Everett C., Jr., 4,375,221, Cl. 130-27.00S.
Cox, Gerald L.; and Maddox, Randall A., to International Business Machines Corporation. Incremental rotary encoder. 4,375,592, Cl. 250-231.05E.

Cragoe, Edward J., Jr.: *See*—
Willard, Alvin K.; Novello, Frederick C.; Hoffman, William F.; and Cragoe, Edward J., Jr., 4,375,475, Cl. 424-279.000.
Crayne, Jerry W.; Wolff, Natalie A.; and Botterman, David L., to Container Corporation of America. Reusable enclosed carrier carton. 4,375,258, Cl. 206-141.000.
Crisp, Peter N.; McRitchie, Allan C.; and Bell, John G., to Procter & Gamble Company, The. Detergent composition having textile softening properties. 4,375,416, Cl. 252-8.700.
Critical Fluid Systems, Inc.: *See*—
deFilippi, Richard P.; and Vivian, J. Edward, 4,375,387, Cl. 202-169.000.
Croda Synthetic Chemicals Limited: *See*—
Meth-Cohn, Otto; and Narine, Brahma, 4,375,544, Cl. 546-114.000.
Cullen, William P.: *See*—
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., 4,375,417, Cl. 252-33.400.
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., 4,375,418, Cl. 252-33.400.
Cunningham, Steven M.; Marsden, James C.; and Arrendale, Hubert G., Jr., to General Dynamics Corporation/Convair Div. Electronic circuit for the detection and analysis of normal zones in a superconducting coil. 4,375,659, Cl. 361-19.000.
Cusano, Dominic A.; Swank, Robert K.; and White, Philip J., to General Electric Company. Index-matched phosphor scintillator structures. 4,375,423, Cl. 252-301.360.
D. Gottlieb & Co.: *See*—
Seitz, Adolf; and Buras, John West, 4,375,286, Cl. 273-121.00A.
Daby, Larry E.: *See*—
Anderson, Nathaniel C.; Daby, Larry E.; Gravdahl, Vincent D.; McCaffrey, Patrick M.; Murray, Bruce A.; and Wright, Bruce W., 4,375,390, Cl. 204-15.000.
Dahan, Jose, to Dentaurum H.P. Winkelstroeter KG. Orthopaedic dentofacial correction appliance. 4,375,355, Cl. 433-5.000.
Daicel Chemical Industries, Ltd.: *See*—
Yuki, Heimei; and Okamoto, Yoshio, 4,375,495, Cl. 428-402.000.
Daimler-Benz Aktiengesellschaft: *See*—
Thoma, Frank; and Oblander, Kurt, 4,375,274, Cl. 239-117.000.
Dart Industries Inc.: *See*—
Pennie, Thomas W.; Parikh, Sunil S.; and Lowe, Charles, 4,375,520, Cl. 521-57.000.
Daum, Joachim: *See*—
Siewert, Gerhard; Boidol, Werner; and Daum, Joachim, 4,375,514, Cl. 435-172.000.
Davida, George I.; Wells, David L.; and Kam, John B., to Wisconsin Alumni Research Foundation. Database encryption and decryption circuit and method using subkeys. 4,375,579, Cl. 178-22.100.
Davis, Jefferson W., Jr., to United States of America, Energy. Synthesis of alpha-amino acids. 4,375,555, Cl. 562-444.000.
Davis, Larry: *See*—
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,375,471, Cl. 424-258.000.
Dawson, James E.: *See*—
Baum, Dean O.; and Dawson, James E., 4,375,344, Cl. 414-708.000.
Dearborn Chemical Company Limited: *See*—
Chapman, Stuart R.; and Pollard, F. Ross, 4,375,359, Cl. 44-51.000.
Debono, Manuel; Merkel, Kurt E.; Weeks, Robert E.; and Cole, Herald J., to Eli Lilly and Company. Biologically pure culture of *Actinoplanes missouriensis*. 4,375,513, Cl. 435-169.000.
DeCaro, Charles J., to Textron Inc. Floating plate holder installation tool. 4,375,119, Cl. 29-240.000.
Deeken, William O., to Goodyear Tire & Rubber Company, The. Method for the elimination of circumferential stress cracks in spun polyesters. 4,375,444, Cl. 264-136.000.
deFilippi, Richard P.; and Vivian, J. Edward, to Critical Fluid Systems, Inc. Apparatus for separating organic liquid solutes from their solvent mixtures. 4,375,387, Cl. 202-169.000.
de Haan, Friedrich J., administrator: *See*—
Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Immink, Kornelis A.; Dijkmans, Eise C.; and Geelen, Mathias H., 4,375,623, Cl. 333-138.000.
Demianczuk, Dionisyj W.: *See*—
Rowden, Clifford E.; McLean, Gregory J.; Franklin, Joseph E.; and Demianczuk, Dionisyj W., 4,375,376, Cl. 148-12.00F.
Dennhardt, Werner, to Hoechst Aktiengesellschaft. Device for transporting and positioning printing plates. 4,375,285, Cl. 271-11.000.
Dentaurum H.P. Winkelstroeter KG: *See*—
Dahan, Jose, 4,375,355, Cl. 433-5.000.
Desjardins, Paul A., to Firecom, Inc. Integrated alarm, security, building management, and communications system. 4,375,637, Cl. 340-517.000.
de Sterke, Arie, to Rontgen Technische Dienst B.V. System for inspecting welded joints in pipe lines by means of ultrasonic waves. 4,375,165, Cl. 73-622.000.
Deutschle, Alan G.: *See*—
Hollingsworth, Allen H.; and Deutschle, Alan G., 4,375,622, Cl. 333-126.000.
Devon, Thomas J., to Eastman Kodak Company. Electrolytic process for the preparation of ethylene glycol and glycerine. 4,375,394, Cl. 204-79.000.
DeVries, Adrian J., to Zenith Radio Corporation. Surface wave acoustic device with compensation for spurious frequency response modes. 4,375,624, Cl. 333-194.000.
de Waard, Peter J., to U.S. Philips Corporation. Semiconductor laser. 4,375,686, Cl. 372-45.000.
Dickey, Avis M., to Dickey, Inc. One-piece, all-plastic reproducing stamp and trough holding unit. 4,375,191, Cl. 101-333.000.
Dickey, Inc.: *See*—
Dickey, Avis M., 4,375,191, Cl. 101-333.000.
DiGeronimo, Ernest M. Forceps, scalpel and blood coagulating surgical instrument. 4,375,218, Cl. 128-303.170.
Dijkmans, Eise C.: *See*—
Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Immink, Kornelis A.; Dijkmans, Eise C.; and Geelen, Mathias H., 4,375,623, Cl. 333-138.000.
Di Leo, Daniel A.; Kurtz, Samuel E.; and Svitak, John J., to Western Electric Co. Microelectronic device. 4,375,606, Cl. 313-499.000.
Dima, Attila F.: *See*—
Silver, David A.; Dima, Attila F.; and Seman, George W., 4,375,577, Cl. 174-22.00R.
DMV-Campina B.V.: *See*—
van Gennip, Adrianus H. M., 4,375,485, Cl. 426-570.000.
Dodge, Carl; and Smith, Harry D., Jr., to Halliburton Company. Formation tester. 4,375,164, Cl. 73-154.000.
Doiron, Gerald J. Fly tiers' vise. 4,375,284, Cl. 269-236.000.
Doiron, Robert E.: *See*—
Giamei, Anthony F.; and Doiron, Robert E., 4,375,375, Cl. 148-11.50F.
Doll, W. Gary. Wide range high accuracy weighing and counting scale. 4,375,243, Cl. 177-25.000.
Donaldson Company, Inc.: *See*—
Wolde-Michael, Girma, 4,375,411, Cl. 210-512.100.
Dooley, Thomas E.: *See*—
Morton, Edward W.; Dooley, Thomas E.; and O'Mullan, Daniel W., 4,375,607, Cl. 315-56.000.
Dorrie, Horst; and Klinkwitz, Kurt, to Robert Bosch GmbH. Rod antenna, particularly for mobile FM signal transducing applications. 4,375,642, Cl. 343-895.000.
Double A Products Company: *See*—
Loup, Ronald L., 4,375,226, Cl. 137-625.650.
Dow Chemical Company, The: *See*—
Pawloski, Chester E., 4,375,546, Cl. 546-292.000.
Renga, James M., 4,375,549, Cl. 556-470.000.
Wang, Pen-Chung; and Renga, James M., 4,375,548, Cl. 556-470.000.
Downey, Patrick: *See*—
Blair, William F.; and Downey, Patrick, 4,375,140, Cl. 49-108.000.
Doxsee Food Corp.: *See*—
Porter, Herschel F., 4,375,264, Cl. 209-606.000.
Drackett Company, The: *See*—
Jones, Gregory R., 4,375,109, Cl. 4-228.000.
Drakoff, Raymond, to Lever Brothers Company. Cosmetic preservative. 4,375,465, Cl. 424-175.000.
D'Souza, Stanley: *See*—
Bubik, Leslie; and D'Souza, Stanley, 4,375,231, Cl. 152-370.000.
Dubinsky, Emanuel. Umbrella cover. 4,375,222, Cl. 135-33.00C.
Dubroeucq, Georges: *See*—
Lacombat, Michel; and Dubroeucq, Georges, 4,375,315, Cl. 350-96.250.
Dueckman, Leonard: *See*—
Onotera, Larry Y.; and Dueckman, Leonard, 4,375,698, Cl. 455-67.000.
Duisman, Jack A.: *See*—
Izod, Thomas P. J.; and Duisman, Jack A., 4,375,568, Cl. 568-758.000.
Dull, Helmut; and Schreihage, Wilhelm, to U.S. Philips Corporation. Device for mounting parts on printed circuit boards. 4,375,126, Cl. 29-740.000.
Dullinger, Karl: *See*—
Kronseder, Hermann; and Dullinger, Karl, 4,375,374, Cl. 134-25.400.
Dunham-Bush, Inc.: *See*—
Shaw, David N., 4,375,156, Cl. 62-468.000.
Dunk, Thomas H. Indicating platform for machine tools. 4,375,129, Cl. 33-185.00R.
Dunn, James M., to Verex Laboratories, Inc. Constant order release aspirin composition and method of treating arthritis. 4,375,468, Cl. 424-230.000.
Durai-Swamy, Kandaswamy, to Occidental Research Corporation. Pyrolysis process. 4,375,402, Cl. 208-8.00R.
Duranleau, Roger G.; and Gates, Walter C., Jr., to Texaco Inc. Catalyst for the production of a hydrogen-rich gas. 4,375,425, Cl. 252-467.000.
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, to Smith Kline & French Laboratories Limited. Amidinosulphonic acid derivatives. 4,375,472, Cl. 424-269.000.
Durk, Victor: *See*—
Schwartz, Harold O.; Gong, Ray F.; and Durk, Victor, 4,375,179, Cl. 84-439.000.
Duro-Test Corporation: *See*—
Fontana, Raymond P.; and Walsh, Peter, 4,375,605, Cl. 313-112.000.
Dworkin, Lawrence W. Compartmentalized file box. 4,375,263, Cl. 206-425.000.
Dwyer, Francis G.; Chu, Pochen; and Cormier, William E., Jr., to Mobil Oil Corporation. Synthesis of large crystallite zeolites. 4,375,458, Cl. 423-329.000.
Dyer, Stanley; Molloy, James J.; and Walker, Donald A., to International Business Machines Corporation. Electrically conductive ribbon break detector for printers. 4,375,339, Cl. 400-249.000.

Dynapol: *See*—
Wingard, Robert E., Jr.; Ng, Steve Y. W.; and Swanson, Sally A., 4,375,357, Cl. 8-647.000.
E. R. Squibb & Sons, Inc.: *See*—
Gordon, Eric M., 4,375,397, Cl. 204-158.00R.
East, Anthony J.: *See*—
Hay, Ian L.; East, Anthony J.; and Calundann, Gordon W., 4,375,530, Cl. 524-605.000.
Eastman Kodak Company: *See*—
Abel, Edward P.; and Weissberger, Edward, 4,375,506, Cl. 430-215.000.
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Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., 4,375,540, Cl. 528-302.000.
McBride, Paul; and Russell, George C., 4,375,539, Cl. 528-288.000.
Mir, Jose M., 4,375,647, Cl. 358-75.000.
Mir, Jose M., 4,375,648, Cl. 358-75.000.
Mir, Jose M.; Varner, Jerry R.; and Kurtz, Clark N., 4,375,649, Cl. 358-75.000.
Newkirk, James S., 4,375,505, Cl. 430-99.000.
Whitmore, Keith E., 4,375,507, Cl. 430-236.000.
Yamamoto, Yasushi S., 4,375,508, Cl. 430-588.000.
Eaton Corporation: *See*—
Morscheck, Timothy J., 4,375,171, Cl. 74-331.000.
Richards, Elmer A.; Vandervoort, John R.; and Bogema, Edward J., 4,375,172, Cl. 74-339.000.
Edwards, Charles L., to Shell Oil Company. Alkoxylation process. 4,375,564, Cl. 568-618.000.
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. 4-Aryloxy-1,2,3,4-tetrahydroisoquinolines. 4,375,471, Cl. 424-258.000.
Eibeck, Richard E.: *See*—
Nalewajek, David; Recla, Eugene B.; Wiles, Robert A.; and Eibeck, Richard E., 4,375,453, Cl. 423-21.100.
Eichmanns, Herbert; Meyer, Wilhelm; and Kemper, Winfried, to Textilausrustungs-Gesellschaft Schroers & Co. Apparatus for applying patterns to a planar structure. 4,375,158, Cl. 68-205.00R.
Elektro-Dahlen AB: *See*—
Henriksson, Roy, 4,375,354, Cl. 432-239.000.
Eli Lilly and Company: *See*—
Berg, David H.; and Hoehn, Marvin M., 4,375,462, Cl. 424-117.000.
Conrad, Robert A., 4,375,432, Cl. 260-244.400.
Debono, Manuel; Merkel, Kurt E.; Weeks, Robert E.; and Cole, Herald J., 4,375,513, Cl. 435-169.000.
Pioch, Richard P., 4,375,547, Cl. 548-205.000.
Elkins, Perry E.; Bell, Jerry E.; Harlow, Richard A.; and Chase, Gordon G., to Ford Motor Company. Method of assembling and sealing an alkali metal battery. 4,375,127, Cl. 29-623.500.
Elsas, Norman E.; and Middleton, James B., to Nemo Industries, Inc. Towel cutting machine. 4,375,175, Cl. 83-18.000.
Elsenbaumer, Ronald L.: *See*—
Miller, Granville G.; Ivory, Dawn M.; Shacklette, Lawrence W.; Chance, Ronald R.; Elsenbaumer, Ronald L.; and Baughman, Ray H., 4,375,427, Cl. 252-512.000.
Emhart Industries, Inc.: *See*—
Rosanio, Ronald R.; Jud, John J.; and Guaragno, Anthony, 4,375,155, Cl. 62-256.000.
Stevenson, James F., 4,375,368, Cl. 65-29.000.
Eng, Olov. Machine for development of exposed pictures. 4,375,325, Cl. 354-318.000.
Engle, Gary L., to General Electric Company. Method and means for filtering and updating pixel data. 4,375,671, Cl. 367-11.000.
Eppley, Robert S. Portable air test kit and system. 4,375,162, Cl. 73-37.000.
Erb, Helmut; and Leese, Werner, to Samson Aktiengesellschaft. Combustion automatic control system. 4,375,273, Cl. 236-21.00R.
Erberich, Betty Louise C.: *See*—
Chitwood, Ralph, 4,375,137, Cl. 43-57.100.
Ericson, Roger K., to Rexnord Inc. Take-apart seal. 4,375,292, Cl. 277-81.00R.
Evans, John M.; Judd, Ian D.; Lovie, Richard H.; and Minshull, John F., to International Business Machines Corporation. Facsimile vector data compression. 4,375,654, Cl. 358-260.000.
Everett, Patrick N., to Jersey Nuclear-Avco Isotopes, Inc. Laser mode locking, Q-switching and dumping system. 4,375,684, Cl. 372-18.000.
Ewanizky, Theodore F., Jr., to United States of America, Army. Thyratron Marx high voltage generator. 4,375,594, Cl. 307-110.000.
Ewert, Edna A. Beehive superstructure transport apparatus. 4,375,113, Cl. 6-12.00R.
Ex-Cell-O Corporation: *See*—
Linquist, Wayne, 4,375,128, Cl. 30-242.000.
Excell Machine Company, Inc.: *See*—
Blair, William F.; and Downey, Patrick, 4,375,140, Cl. 49-108.000.
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Robinson, Leon H.; Speers, Jerry M.; and Barry, Adelber, 4,375,310, Cl. 339-88.00R.
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Baker, Richard H., 4,375,662, Cl. 363-95.000.
Moss, Gerald, 4,375,362, Cl. 48-197.00R.
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,375,515, Cl. 435-189.000.
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Andersson, Sven, 4,375,225, Cl. 137-625.170.
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Faler, Gary R., to General Electric Company. Method for making bisphenol. 4,375,567, Cl. 568-727.000.
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Leonard, James H., 4,375,628, Cl. 337-75.000.
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Knollmueller, Karl O.; and Fedynyshyn, Theodore H., 4,375,420, Cl. 252-78.300.
Feldman, Steven, to AMP Incorporated. Diode connector. 4,375,311, Cl. 339-112.00R.
Fenrich, Eileen W.; and Garcia, Elizabeth S. Jogger's identification tag. 4,375,133, Cl. 40-586.000.
Ferdinand, Scott A.: *See*—
Buck, Gordon H.; Ferdinand, Scott A.; and Klose, George J., 4,375,666, Cl. 364-410.000.
Ferrier, Gordon G.: *See*—
Bird, Alfred J.; and Ferrier, Gordon G., 4,375,550, Cl. 560-47.000.
Fikart, Josef L.: *See*—
Schneiter, Andres F.; and Fikart, Josef L., 4,375,621, Cl. 333-16.00T.
Finike Italiana Marposs, S.p.A.: *See*—
Selleri, Narciso, 4,375,256, Cl. 198-360.000.
Finley, Joseph H., to FMC Corporation. Process for making allylic esters of tetrabromophthalic acid. 4,375,551, Cl. 560-83.000.
Firecon, Inc.: *See*—
Desjardins, Paul A., 4,375,637, Cl. 340-517.000.
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Long, William A.; Fischer, Ward E.; and Brunelle, Rene J., 4,375,300, Cl. 297-232.000.
FMC Corporation: *See*—
Cardis, Angeline B., 4,375,476, Cl. 424-302.000.
Chiang, John S. C., 4,375,456, Cl. 423-306.000.
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Hora, Richard E., 4,375,116, Cl. 15-181.000.
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Focke, Heinz; and Liedtke, Kurt, 4,375,260, Cl. 206-264.000.
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Fontana, Raymond P.; and Walsh, Peter, to Duro-Test Corporation. Ellipsoidal envelope for incandescent lamp with infrared energy return means. 4,375,605, Cl. 313-112.000.
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Kuhn, William B., 4,375,693, Cl. 375-120.000.
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Ford Motor Company: *See*—
Elkins, Perry E.; Bell, Jerry E.; Harlow, Richard A.; and Chase, Gordon G., 4,375,127, Cl. 29-623.500.
Forsyth Dental Infirmary for Children: *See*—
Jordan, Harold V., 4,375,510, Cl. 435-34.000.
Fox, Richard E., to Appleton Papers Inc. Dielectric record material. 4,375,492, Cl. 428-212.000.
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Swenson, Richard M.; and Franck, Jerome B., 4,375,168, Cl. 73-658.000.
Franklin Institute, The: *See*—
Kronick, Paul L., 4,375,407, Cl. 209-8.000.
Franklin, Joseph E.: *See*—
Rowden, Clifford E.; McLean, Gregory J.; Franklin, Joseph E.; and Demianczuk, Dionisyj W., 4,375,376, Cl. 148-12.00F.
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Frei, Charles, to Ateliers des Charmilles, S.A. Process and apparatus for controlling the concentration of solid particles in suspension in an EDM machining fluid. 4,375,588, Cl. 219-69.00M.
Freitag, Dieter: *See*—
Idel, Karsten; Cohnen, Wolfgang; Freitag, Dieter; and Schlak, Ottfried, 4,375,525, Cl. 524-108.000.
French, Michael J. Control in wave energy conversion device employing a flexible walled enclosure. 4,375,151, Cl. 60-398.000.
Frischkorn, Hans; and Schinzel, Erich, to Hoechst Aktiengesellschaft. Process for the preparation of naphthalene-1,4-dicarboxylic acid. 4,375,556, Cl. 562-484.000.
Fritz, Stefan: *See*—
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Frommer, Moshe A.: *See*—
Kraus, Menahem A.; Livni, Avinoam; and Frommer, Moshe A., 4,375,346, Cl. 417-388.000.
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Fuller, Paul; and Froud, Roderick W., 4,375,613, Cl. 318-786.000.
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Ohara, Yoshiaki; and Ohgami, Masaaki, 4,375,210, Cl. 123-440.000.
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Funatsu, Tsuneo, 4,375,645, Cl. 357-50.000.

Fujiwara, Akiko; Hoshino, Tatsuo; and Tazoe, Masaaki, to Hoffmann-La Roche Inc. Process to produce aclacinomycins A and B. 4,375,511, Cl. 435-78.000.

Fukui, Kiyoshi; and Okimoto, Kiyomi, to UBE Industries Ltd. Process for preparing amidinecarboxylic acids. 4,375,554, Cl. 562-440.000.

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Watanabe, Masakazu; Okuno, Akiyasu; Fukuura, Isamu; and Matsuo, Yasushi, 4,375,517, Cl. 501-87.000.

Fuller, Paul; and Froud, Roderick W. Electrical control circuit. 4,375,613, Cl. 318-786.000.

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Funatsu, Tsuneo, to Fujitsu Limited. Semiconductor device and a method of producing the same. 4,375,645, Cl. 357-50.000.

Furuhashi, Syoji; and Higashiyama, Kazuhiro, to Nissan Motor Company, Ltd. Idling speed controlling system for an internal combustion engine. 4,375,208, Cl. 123-339.000.

Gabano, Jean-Paul, to Societe Anonyme dite: GIPELEC. Electrolyte for a lithium/thionyl chloride electric cell, a method of preparing said electrolyte and an electric cell which includes said electrolyte. 4,375,502, Cl. 429-101.000.

Gaetano, Righetti, to Hoyne Industries, Inc. Beveling apparatus. 4,375,141, Cl. 51-3.000.

GAF Corporation: *See*—
Katz, Michael M.; Hashem, Mohamed M.; and Talley, Charles P., 4,375,437, Cl. 260-990.000.
Lorenz, Donald H.; and Williams, Earl P., 4,375,398, Cl. 204-159.150.

Gaia, Aldino J., to McGraw-Edison Company. Multiple element current limiting fuse. 4,375,630, Cl. 337-248.000.

Galle, Edward M., to Hughes Tool Company. Sealed and lubricated rock bit with air protected seal ring. 4,375,242, Cl. 175-228.000.

Gallon, Jean, to Union Industrielle et D'Entreprise. Drilling installation, more specifically for oil-drilling operations. 4,375,241, Cl. 173-151.000.

Gander, Robert J.; Sipos, Tibor; and Buck, Carl J., to Johnson & Johnson Products, Inc. Sulfonated vinyl aromatic homopolymers and copolymers as dental plaque barriers. 4,375,461, Cl. 424-56.000.

Garber, Jan W.: *See*—
Buckles, Richard G.; and Garber, Jan W., 4,375,509, Cl. 435-2.000.

Garcia, Elizabeth S.: *See*—
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Garvert, Robert M., to Phillips Petroleum Company. Reformer control. 4,375,405, Cl. 208-134.000.

Gates, Walter C., Jr.: *See*—
Duranleau, Roger G.; and Gates, Walter C., Jr., 4,375,425, Cl. 252-467.000.

Gaukel, John J.: *See*—
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Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Immink, Kornelis A.; Dijkmans, Eise C.; and Geelen, Mathias H., 4,375,623, Cl. 333-138.000.

Genequand, Pierre; Hindi, Guy N.; Gross, Daniel; Pfeifer, Hermann; and Kalbskoph, Reinhard, to Battelle Development Corporation. Process and installation for manufacturing a photothermal converter apparatus. 4,375,380, Cl. 156-72.000.

General Dynamics Corporation/Convair Div.: *See*—
Cunningham, Steven M.; Marsden, James C.; and Arrendale, Hubert G., Jr., 4,375,659, Cl. 361-19.000.

General Dynamics, Pomona Division: *See*—
Mitchell, Gordon C.; and Horwitz, Barney, 4,375,578, Cl. 174-52.00H.

General Electric Company: *See*—
Cusano, Dominic A.; Swank, Robert K.; and White, Philip J., 4,375,423, Cl. 252-301.360.
Engle, Gary L., 4,375,671, Cl. 367-11.000.
Faler, Gary R., 4,375,567, Cl. 568-727.000.
Hanson, Raymond F., 4,375,701, Cl. 455-343.000.
Konarski, Mieczyslaw, 4,375,276, Cl. 239-265.290.
Konrad, Charles E., 4,375,603, Cl. 318-139.000.
Rock, Brian E., 4,375,307, Cl. 339-14.00R.
Tiemann, Jerome J., 4,375,650, Cl. 358-133.000.

General Foods Corporation: *See*—
Lee, Charleston R.; Russo, Joseph J.; Jeter, Shirley A.; and Sullivan, Thomas P., 4,375,484, Cl. 426-549.000.

General Motors Corporation: *See*—
Widdowson, Richard E., 4,375,228, Cl. 138-46.000.

General Refractories Co.: *See*—
Henry, Francis W., Jr.; and Wood, Merrill, Jr., 4,375,518, Cl. 501-99.000.

Gentry, Glenn A. Filtration apparatus. 4,375,409, Cl. 210-232.000.

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Gerber, Hermann E., to United States of America, Navy. Nephelometer. 4,375,334, Cl. 356-336.000.

Gerhart, Fritz: *See*—
Bey, Philippe; Jung, Michael; and Gerhart, Fritz, 4,375,477, Cl. 424-319.000.

Gessford, James D. Solar collector panel. 4,375,216, Cl. 126-450.000.

GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft mbH: *See*—
Kralowetz, Johanna; and Tischler, Manfred, 4,375,670, Cl. 364-474.000.

Giamei, Anthony F.; and Doiron, Robert E., to United Technologies Corporation. Constant energy rate forming. 4,375,375, Cl. 148-11.50F.

Giglia, Robert D.; and Huang, Sun Y., to American Cyanamid Company. Electrochromic cells with improved electrolyte system. 4,375,318, Cl. 350-357.000.

Gilliom, John W., to UMC Industries, Inc. Apparatus for heating foods, such as french fried potatoes. 4,375,184, Cl. 99-422.000.

Giovanni, Chietti; and Selvi, Fabio, to C.K.S. S.n.c. Apparatus for automatically laying out a stocking, collant or the like. 4,375,267, Cl. 223-112.000.

Gist, Larry B.; and Carruth, Carroll D., Jr. Telephone answering system and method. 4,375,582, Cl. 179-27.0FH.

Givaudan Corporation: *See*—
Helmlinger, Daniel; and Naegeli, Peter, 4,375,428, Cl. 252-522.00R.

Godlewski, Joseph F. Mortar stop for hollow block foundation walls with attached locator tab. 4,375,143, Cl. 52-98.000.

Goldberg, Thomas R., to Ampex Corporation. Joystick control. 4,375,631, Cl. 338-128.000.

Gong, Ray F.: *See*—
Schwartz, Harold O.; Gong, Ray F.; and Durk, Victor, 4,375,179, Cl. 84-439.000.

Gooding, Elwyn R., to University of Michigan, The Regents of the. Energy-absorbing insert for protective headgear. 4,375,108, Cl. 2-413.000.

Goodwin, Mark L.: *See*—
Foller, Peter C.; Goodwin, Mark L.; and Tobias, Charles W., 4,375,395, Cl. 204-129.000.

Goodyear Tire & Rubber Company, The: *See*—
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Sandstrom, Paul H., 4,375,497, Cl. 428-407.000.
Wideman, Lawson G., 4,375,572, Cl. 585-435.000.

Gordon, Eric M., to E. R. Squibb & Sons, Inc. Process for preparing 3-methylene cephalosporins. 4,375,397, Cl. 204-158.00R.

Gottfried Bischoff Bau Kompl. Gasreintigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft: *See*—
Hegemann, Karl-Rudolf; Weissert, Helmut; and Brinkmann, Albert, 4,375,439, Cl. 261-62.000.

Graeme-Barber, Christopher; and Painter, Donald S., to United Wire Group p.l.c. Submersible or semi-submersible structures. 4,375,199, Cl. 114-222.000.

Graham, James R.; and Huntington, John G., to Occidental Research Corporation. Process for producing benzene carboxylic acid salts from aromatic materials. 4,375,553, Cl. 562-408.000.

Gravdahl, Vincent D.: *See*—
Anderson, Nathaniel C.; Daby, Larry E.; Gravdahl, Vincent D.; McCaffrey, Patrick M.; Murray, Bruce A.; and Wright, Bruce W., 4,375,390, Cl. 204-15.000.

Great Lakes Carbon Corporation: *See*—
Faircloth, James M., Jr., 4,375,340, Cl. 403-296.000.

Green, Gordon: *See*—
Beggs, James M.; Green, Gordon; and Mattauch, Robert J., 4,375,396, Cl. 204-129.550.

Green, Samuel J., to Champion Spark Plug Company. Glow plug control circuit. 4,375,205, Cl. 123-179.00H.

Greif, Norbert; Klahr, Erhard; and Trieselt, Wolfgang, to BASF Aktiengesellschaft. Low-foaming, biodegradable alkoxylation products terminated with glycerine ether radicals, and a process for their preparation. 4,375,565, Cl. 568-622.000.

Greig, George H., to Burroughs Corporation. Protected servomechanism. 4,375,611, Cl. 318-626.000.

Griffin, Wendell L., to Wells Electronics, Inc. Zero insertion force connector block. 4,375,309, Cl. 339-75.00M.

Grohoski, Theodore: *See*—
Mancini, William; Weiss, Carl; and Grohoski, Theodore, 4,375,259, Cl. 206-223.000.

Gross, Daniel: *See*—
Genequand, Pierre; Hindi, Guy N.; Gross, Daniel; Pfeifer, Hermann; and Kalbskoph, Reinhard, 4,375,380, Cl. 156-72.000.

Gruett, Monte D.: *See*—
Lesher, George Y.; and Gruett, Monte D., 4,375,467, Cl. 424-263.000.

GTE Automatic Electric Laboratories, Inc.: *See*—
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GTE Laboratories Incorporated: *See*—
Cogan, Adrian I., 4,375,124, Cl. 29-571.000.
Peled, Emanuel; and Lombardi, Anthony, 4,375,501, Cl. 429-94.000.

Guaragno, Anthony: *See*—
Rosanio, Ronald R.; Jud, John J.; and Guaragno, Anthony, 4,375,155, Cl. 62-256.000.

Gudmestad, Ragnar; and Butler, John D., to Artos Engineering Company. Automatic cord hanking machine. 4,375,186, Cl. 100-7.000.

Guertin, Joseph G. American family tree game. 4,375,288, Cl. 273-273.000.
Gunther, Dieter: *See—*
Sieber, Albrecht; Schulzke, Peter; Gunther, Dieter; and Steinbrenner, Ulrich, 4,375,207, Cl. 123-333.000.
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Guyot, Jean C.: *See—*
Le Goff, Denis; and Guyot, Jean C., 4,375,685, Cl. 372-32.000.
Haack, Randall W.: *See—*
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Habraken, Lambertus E. H.: *See—*
Kipperman, Antoon H. M.; and Habraken, Lambertus E. H., 4,375,443, Cl. 264-61.000.
Hackett, Brian K., to Minnesota Mining & Manufacturing Co. Method and device for frequency translation. 4,375,691, Cl. 375-8.000.
Hageman, David L., to Pfizer Inc. Process for 6'-amino-penicillanoyloxymethyl penicillanate 1,1-dioxide. 4,375,434, Cl. 260-245.20R.
Hall, Norman R. Convertible mat and carrying bag combination. 4,375,111, Cl. 5-419.000.
Halley, Louis E. A. Machine for dispensing a doughy substance. 4,375,336, Cl. 366-77.000.
Hallford, Ben R., to Rockwell International Corporation. Microwave frequency converter with dual balun port. 4,375,699, Cl. 455-327.000.
Hallford, Ben R., to Rockwell International Corporation. Low frequency converter with isolated mixer sections. 4,375,700, Cl. 455-330.000.
Halliburton Company: *See—*
Barrington, Burchus Q.; and Nix, George J., 4,375,239, Cl. 166-336.000.
Butler, William S., 4,375,343, Cl. 414-508.000.
Dodge, Carl; and Smith, Harry D., Jr., 4,375,164, Cl. 73-154.000.
Halm Instrument Co., Inc.: *See—*
Quinci, Emanuel; and Konars, Clement R., 4,375,190, Cl. 101-177.000.
Halon, Bernard, to RCA Corporation. Plasma etching of aluminum. 4,375,385, Cl. 156-643.000.
Halperin, Yitzhak; and Zioni, Dov, to Institute for Science and Halacha. Indirectly activatable telephone system. 4,375,583, Cl. 179-90.0AD.
Hansen, Irvin L.; and Haack, Randall W., to Westinghouse Electric Corp. Transformer tank panel neutral connection with reverse current shielding conductors. 4,375,627, Cl. 336-5.000.
Hanson, Charles B., to J. I. Case Company. Clamping arm assembly for a backhoe. 4,375,345, Cl. 414-722.000.
Hanson, Raymond F., to General Electric Company. Battery or AC driven radio receiver power supply. 4,375,701, Cl. 455-343.000.
Hanyu, Susumu, to Janome Sewing Machine Co. Ltd. Hemstitching method of sewing machine. 4,375,198, Cl. 112-269.100.
Hara, Hisanori; Kawamura, Takafumi; Takamori, Osamu; and Ieko, Wako, to Nippon Steel Corporation. Apparatus for filling carbonizing chamber of coke oven with powered coal with vibration applied thereto. 4,375,388, Cl. 202-239.000.
Harding, Geoffrey; and Wagner, Wolfgang, to U.S. Philips Corporation. Device for determining the density distribution in an object. 4,375,695, Cl. 378-006.000.
Harlow, Richard A.: *See—*
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Harris Corporation: *See—*
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Harrison, Charles W.; Pitman, Herbert J.; Sequeira, Avilino, Jr.; and Begnaud, John D., to Texaco Inc. Solvent dewaxing process. 4,375,403, Cl. 208-33.000.
Hart, Donald W.; and Slaugh, Lynn H., to Shell Oil Company. Process for the preparation of ethylbenzene from 4-vinylcyclohexene-1. 4,375,571, Cl. 585-431.000.
Hartmannsgruber, Max, to Zinser Textilmaschinen GmbH. Textile machine shut-off device. 4,375,149, Cl. 57-81.000.
Harvey, Denis H., to Plessey Handel Und Investments AG. Radar systems. 4,375,640, Cl. 343-5.0NQ.
Harvey, Kenneth; Hayes, Harry; and Morton, Anthony J., to Colgate-Palmolive. Opaque dentifrice. 4,375,460, Cl. 424-52.000.
Hashem, Mohamed M.: *See—*
Katz, Michael M.; Hashem, Mohamed M.; and Talley, Charles P., 4,375,437, Cl. 260-990.000.
Hatanaka, Masayuki; Kurita, Atsushi; Yokoyama, Yoshikane; and Kusakabe, Masahiro, to Toshiba Silicone Co., Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Curable silicone elastomer composition. 4,375,523, Cl. 523-212.000.
Havas, Jeno; Nagy, Geza; Porjesz, Emma; and Pungor, Erno, to Radelkis Elektrokemiai Miszergyarto Szovetkezet. Molecule selective sensor for industrial use and procedure for its preparation. 4,375,399, Cl. 204-195.00B.
Hay, Ian L.; East, Anthony J.; and Calundann, Gordon W., to Celanese Corporation. Polyester of 2,6-naphthalene dicarboxylic acid, 2,6-dihydroxy naphthalene, terephthalic acid, and hydroquinone capable of forming an anisotropic melt. 4,375,530, Cl. 524-605.000.
Hayes, Harry: *See—*
Harvey, Kenneth; Hayes, Harry; and Morton, Anthony J., 4,375,460, Cl. 424-52.000.
Haynes, John L., to Becton Dickinson and Company. Apparatus for counting particles in a liquid suspension. 4,375,615, Cl. 324-71.400.
Heescher, Felix; and Caroe, Claus J. Insulation of shed-like buildings. 4,375,232, Cl. 160-84.00R.
Hegemann, Karl-Rudolf; Weissert, Helmut; and Brinkmann, Albert, to Gottfried Bischoff Bau Kompl. Gasreinigungs- und Wasserrueckkuhlanlagen GmbH & Co. Kommanditgesellschaft. Annular gap scrubber. 4,375,439, Cl. 261-62.000.
Helmlinger, Daniel; and Naegeli, Peter, to Givaudan Corporation. 2-Substituted-1-acetoxy and hydroxy-1-methyl-cyclohexanes. 4,375,428, Cl. 252-522.00R.
Hennings, George N.: *See—*
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Henrikson, Roy, to Elektro-Dahlen AB. Bakery oven and an oven cart received therein. 4,375,354, Cl. 432-239.000.
Henry, Francis W., Jr.; and Wood, Merrill, Jr., to General Refractories Co. Resinous petroleum residue refractory binders. 4,375,518, Cl. 501-99.000.
Herczog, Andrew, to Corning Glass Works. Sodium ion conducting glasses and batteries embodying glasses. 4,375,503, Cl. 429-104.000.
Hergenrother, Paul M.: *See—*
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Herold, Albert J.: *See—*
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Herold, Robert A., to United Technologies Corporation. Core configuration for casting hollow parts in mating halves. 4,375,282, Cl. 249-175.000.
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Hilliard, Orval H.: *See—*
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Hills, Derek W.; and White, George R., to Smith Kline & French Laboratories Limited. 3-,4-Dihydroimidazo (3,4-c)-1,3-pyrimidines and 4,5-dihydroimidazo (3,4-c)-1,3-diazepines. 4,375,435, Cl. 260-245.600.
Hindi, Guy N.: *See—*
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Hinson, Betty R. Method for making a handcrafted pile rug and the resulting product. 4,375,197, Cl. 112-266.200.
Hinson, Virgil H.: *See—*
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Hirohata, Michio: *See—*
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Hobart Corporation: *See—*
Berner, George J.; and Frow, Robert M., 4,375,189, Cl. 101-68.000.
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Hoechst Aktiengesellschaft: *See—*
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Dennhardt, Werner, 4,375,285, Cl. 271-11.000.
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Muller, Werner H.; and Berthold, Rudiger, 4,375,560, Cl. 564-415.000.
Wegener, Peter; Riemenschneider, Wilhelm; and Ulmschneider, Dieter, 4,375,436, Cl. 260-545.00R.
Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,375,471, Cl. 424-258.000.
Hoehn, Marvin M.: *See—*
Berg, David H.; and Hoehn, Marvin M., 4,375,462, Cl. 424-117.000.
Hoffman, William F.: *See—*
Willard, Alvin K.; Novello, Frederick C.; Hoffman, William F.; and Cragoe, Edward J., Jr., 4,375,475, Cl. 424-279.000.
Hoffmann-La Roche Inc.: *See—*
Chan, Ka-Kong; and Pawson, Beverly A., 4,375,563, Cl. 568-308.000.
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Hogan, Mark J., to Brunswick Corporation. Camouflage material. 4,375,488, Cl. 428-17.000.
Hoiberg, Douglas I.: *See—*
Carlson, Lennart L.; and Hoiberg, Douglas I., 4,375,381, Cl. 156-195.000.
Holec N.V.: *See—*
Kipperman, Antoon H. M.; and Habraken, Lambertus E. H., 4,375,443, Cl. 264-61.000.
Hollingsworth, Allen H.; and Deutschle, Alan G., to Motorola, Inc. Multiport radio frequency signal combiner. 4,375,622, Cl. 333-126.000.
Hollingsworth, Carl E.: *See—*
Tate, Stanley H.; Roberts, Donald K.; Hollingsworth, Carl E.; and Nute, William R., 4,375,660, Cl. 361-50.000.
Holmes, William A., to Polaroid Corporation. Disposable processing kit containing film. 4,375,324, Cl. 354-303.000.
Honeywell Inc.: *See—*
Jensen, Norman E.; and Van Sloun, Peter H., 4,375,504, Cl. 429-115.000.
Nicholas, Merle E.; and Renier, James J., 4,375,353, Cl. 431-13.000.
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O'Keefe, David B.; and Miller, Robert C., 4,375,638, Cl. 340-726.000.
Honig, Steven. Roll-up fold-up sluice apparatus. 4,375,491, Cl. 428-167.000.

Hook, Dale L.; Waypa, John; and Jacobs, Theodore A., to United States of America, Army. Hypersonic wedge nozzle for chemical lasers. 4,375,687, Cl. 372-58.000.
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Hora, Richard E., to FMC Corporation. Vehicle washing brush. 4,375,116, Cl. 15-181.000.
Horan, Ann C.: *See—*
Waitz, Jay A.; Patel, Mahesh G.; and Horan, Ann C., 4,375,542, Cl. 536-7.100.
Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Nitrogen-containing products of phosphosulfurized amides and lubricants containing same. 4,375,419, Cl. 252-46.700.
Horrom, Bruce W.; and Stein, Herman H., to Abbott Laboratories. Aminobenzoic acid derivatives. 4,375,478, Cl. 424-319.000.
Horwitz, Barney: *See—*
Mitchell, Gordon C.; and Horwitz, Barney, 4,375,578, Cl. 174-52.00H.
Hoshi, Katsuji, to Nippon Electric Co., Ltd. Reference voltage generator circuit. 4,375,596, Cl. 307-297.000.
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Fujiwara, Akiko; Hoshino, Tatsuo; and Tazoe, Masaaki, 4,375,511, Cl. 435-78.000.
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Yokota, Hideo; and Hosoe, Kazuya, 4,375,332, Cl. 356-1.000.
Hou, Ching-Tsang: *See—*
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,375,515, Cl. 435-189.000.
Howard, John F., to Canadian General Electric Co., Ltd. Fuse with aluminum fuse element having tin-plated copper terminals. 4,375,629, Cl. 337-159.000.
Howell, Thomas J.; Paterson, William G.; and Pattison, Ian, to Rohm and Haas Company. Ion exchange resins. 4,375,519, Cl. 521-31.000.
Hoyne Industries, Inc.: *See—*
Gaetano, Righetti, 4,375,141, Cl. 51-3.000.
Hrenyo, John, to Tekni-Plex, Inc. Containers for fragile articles. 4,375,262, Cl. 206-418.000.
Hristov, Hristomir D.: *See—*
Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,375,270, Cl. 228-37.000.
Huang, Sun Y.: *See—*
Giglia, Robert D.; and Huang, Sun Y., 4,375,318, Cl. 350-357.000.
Huber, Willy, to J. Wagner AG. Installation for powder-coating work pieces. 4,375,487, Cl. 427-195.000.
Hudak, John J., to United States of America, National Security Agency. Precision linear tuning circuit. 4,375,626, Cl. 334-79.000.
Hughes Aircraft Company: *See—*
Tangonan, Gregory L., 4,375,312, Cl. 350-96.120.
Visher, Paul S., 4,375,697, Cl. 455-13.000.
Hughes, John W.: *See—*
Zucchi, Alfred A.; Altoz, Frank E.; and Hughes, John W., 4,375,290, Cl. 277-12.000.
Hughes Tool Company: *See—*
Baugh, John L.; Manderscheid, Phillip H.; and Montgomery, James W., 4,375,240, Cl. 166-387.000.
Galle, Edward M., 4,375,242, Cl. 175-228.000.
Hunter Douglas International N.V.: *See—*
Bachtiger, Urs, 4,375,107, Cl. 2-131.000.
Huntington, John G.: *See—*
Graham, James R.; and Huntington, John G., 4,375,553, Cl. 562-408.000.
Hutchinson, William L.: *See—*
Nusbickel, Edward M., Jr.; Hutchinson, William L.; and Albert, James E., 4,375,167, Cl. 73-644.000.
Huther, Werner: *See—*
Rossmann, Axel; and Huther, Werner, 4,375,233, Cl. 164-9.000.
Hyland, Robert N.: *See—*
Brock, George W.; Hyland, Robert N.; Pawlowski, Edward J.; and Shelledy, Frank B., 4,375,657, Cl. 360-125.000.
Ichikawa, Hiroshi: *See—*
Mikami, Hitoshi; Saito, Toshimasa; and Ichikawa, Hiroshi, 4,375,229, Cl. 140-102.000.
Idel, Karsten; Cohnen, Wolfgang; Freitag, Dieter; and Schlak, Ottfried, to Bayer Aktiengesellschaft. Use of organic silicon compounds for stabilizing and brightening polycarbonates which are free from phosphites and free from boric acid esters. 4,375,525, Cl. 524-108.000.
Ieko, Wako: *See—*
Hara, Hisanori; Kawamura, Takafumi; Takamori, Osamu; and Ieko, Wako, 4,375,388, Cl. 202-239.000.
Ikeda, Tokuzo: *See—*
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,375,446, Cl. 264-518.000.
Imagawa, Kyoshiro: *See—*
Sakuragi, Shiro; Imagawa, Kyoshiro; and Saito, Mitsunori, 4,375,314, Cl. 350-96.230.
Imber, Oscar: *See—*
Schneider, Irwin; Collins, William C.; Imber, Oscar; and Klein, Philipp H., 4,375,429, Cl. 252-584.000.
Immink, Kornelis A.: *See—*
Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Immink, Kornelis A.; Dijkmans, Eise C.; and Geelen, Mathias H., 4,375,623, Cl. 333-138.000.
Imperial Chemical Industries PLC: *See—*
Stokes, Richard M., 4,375,494, Cl. 428-323.000.
Imperto, Eugene G.; and Hilliard, Orval H., to Intermountain Research and Development Corporation. Electrostatic enrichment of trona and nahcolite ores. 4,375,454, Cl. 423-206.00T.
Imura, Toshinori: *See—*
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Institute for Science and Halacha: *See—*
Halperin, Yitzhak; and Zioni, Dov, 4,375,583, Cl. 179-90.0AD.
Institute Po Metaloznanie I Technologia NA Metalite: *See—*
Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,375,270, Cl. 228-37.000.
Intermountain Research and Development Corporation: *See—*
Imperto, Eugene G.; and Hilliard, Orval H., 4,375,454, Cl. 423-206.00T.
International Automated Machinery, Inc.: *See—*
Chung, Yun H., 4,375,146, Cl. 53-453.000.
International Business Machines Corporation: *See—*
Cox, Gerald L.; and Maddox, Randall A., 4,375,592, Cl. 250-231.0SE.
Dyer, Stanley; Molloy, James J.; and Walker, Donald A., 4,375,339, Cl. 400-249.000.
Evans, John M.; Judd, Ian D.; Lovie, Richard H.; and Minshull, John F., 4,375,654, Cl. 358-260.000.
Radman, Anton J., Jr.; and Yudico, Ricardo, 4,375,656, Cl. 360-102.000.
White, James M., 4,375,652, Cl. 358-213.000.
Wu, Philip T., 4,375,600, Cl. 307-530.000.
International Playtex, Inc.: *See—*
Cole, Raymond; Kennedy, Raymond; and McCluskey, Lincoln, 4,375,445, Cl. 264-250.000.
Irie, Kenji: *See—*
Kushida, Hachiro; Takasugi, Tsuneji; and Irie, Kenji, 4,375,391, Cl. 204-35.00N.
Isler, Jack J.: *See—*
van de Wetering, Gerrit; and Isler, Jack J., 4,375,265, Cl. 220-1.500.
Itagaki, Masanori: *See—*
Mori, Kouji; Segawa, Hideo; Sakurai, Kouichi; and Itagaki, Masanori, 4,375,644, Cl. 357-30.000.
ITT Industries, Inc.: *See—*
Bleckmann, Hans W.; and Loreck, Heinz, 4,375,599, Cl. 307-519.000.
Burgdorf, Jochen, 4,375,250, Cl. 188-72.200.
Schopper, Bernd; Lowe, Derek; Reinartz, Hans-Dieter; and Tandler, Peter, 4,375,304, Cl. 303-52.000.
Ivory, Dawn M.: *See—*
Miller, Granville G.; Ivory, Dawn M.; Shacklette, Lawrence W.; Chance, Ronald R.; Elsenbaumer, Ronald L.; and Baughman, Ray H., 4,375,427, Cl. 252-512.000.
Iwata, Takashi: *See—*
Inagaki, Tetsuhiko; Iwata, Takashi; Oya, Tetsuro; and Imura, Toshinori, 4,375,323, Cl. 354-64.000.
Izod, Thomas P. J.; and Duisman, Jack A., to Union Carbide Corporation. Chromatographic separations using a unique silica polymorph. 4,375,568, Cl. 568-758.000.
Izumi, Shinichi: *See—*
Aono, Masami; and Izumi, Shinichi, 4,375,252, Cl. 188-79.50P.
Izumi, Soichi: *See—*
Ohtani, Saburo; Mori, Toshimichi; and Izumi, Soichi, 4,375,378, Cl. 148-12.00B.
J. I. Case Company: *See—*
Baum, Dean O.; and Dawson, James E., 4,375,344, Cl. 414-708.000.
Hanson, Charles B., 4,375,345, Cl. 414-722.000.
J. Wagner AG: *See—*
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Jacobs, Theodore A.: *See—*
Hook, Dale L.; Waypa, John; and Jacobs, Theodore A., 4,375,687, Cl. 372-58.000.
Jakoplic, Richard: *See—*
Van Hoesen, Harold E.; and Jakoplic, Richard, 4,375,364, Cl. 55-152.000.
James River-Dixie/Northern, Inc.: *See—*
Maroszek, Raymond V.; and Oppermann, Walter J., 4,375,482, Cl. 426-124.000.
Jan, Raymond J.; and Montgomery, Alistair H., to Mobil Oil Corporation. Process for the separation and recovery of molybdenum and uranium from leach solution using ion exchange. 4,375,452, Cl. 423-7.000.
Janome Sewing Machine Co. Ltd.: *See—*
Hanyu, Susumu, 4,375,198, Cl. 112-269.100.
Janson, Mats O., to Tylo Sauna S.A. Corporation. Temperature regulator mounting arrangement for electric sauna heating units. 4,375,590, Cl. 219-364.000.
Jarman, Davis R.; and Hinson, Virgil H. Vehicle frame datum line reference system. 4,375,131, Cl. 33-288.000.
Jayant, Nuggehally S., to Bell Telephone Laboratories, Incorporated. Digital transmission error reduction. 4,375,581, Cl. 179-15.55R.
Jensen, Gerald A.; and Merry, Ted G., to Pako Corporation. Photographic film splice. 4,375,490, Cl. 428-60.000.
Jensen, Norman E.; and Van Sloun, Peter H., to Honeywell Inc. Hydrodynamic reserve battery activation system. 4,375,504, Cl. 429-115.000.
Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Everett, Patrick N., 4,375,684, Cl. 372-18.000.

Jeter, Shirley A.: *See*—
Lee, Charleston R.; Russo, Joseph J.; Jeter, Shirley A.; and Sullivan, Thomas P., 4,375,484, Cl. 426-549.000.

Jett, William B., Jr., to National Semiconductor Corporation. Linearized FM quadrature detector. 4,375,618, Cl. 329-103.000.

Johnson, Edwin A.: *See*—
Leung, Chun-Keung; Schira, John J.; and Johnson, Edwin A., 4,375,668, Cl. 364-431.080.

Johnson & Johnson Products, Inc.: *See*—
Gander, Robert J.; Sipos, Tibor; and Buck, Carl J., 4,375,461, Cl. 424-56.000.

Johnson, Matthey & Co., Limited: *See*—
Bird, Alfred J.; and Ferrier, Gordon G., 4,375,550, Cl. 560-47.000.
Knapton, Arthur G.; and Selman, Gordon L., 4,375,426, Cl. 252-472.000.

Johnson, Mize, Jr., to Harris Corporation. Synchronous bus arbiter. 4,375,639, Cl. 340-825.500.

Johnson, William E.; Michalski, Thomas F.; and Ryan, William H., to Owens-Illinois, Inc. Electronic control system for a glassware forming machine. 4,375,669, Cl. 364-473.000.

Jones, Gregory R., to Drackett Company, The. Passive dispenser having a double air vent system. 4,375,109, Cl. 4-228.000.

Jordan, Harold V., to Forsyth Dental Infirmary for Children. Selective medium composition and method for the detection of *Actinomyces viscosus* and *Actinomyces naeslundii*. 4,375,510, Cl. 435-34.000.

Jorgensen, August H., Jr.: *See*—
Park, Hung S.; and Jorgensen, August H., Jr., 4,375,533, Cl. 526-193.000.

Josefson, Lars G.; Oderland, Karl-Erik I.; and Winnberg, Jan-Olov, to Telefonaktiebolaget L M Ericsson. Method in a tracking radar to attain a large unambiguous range for detected targets by means of radar pulses with high repetition frequency. 4,375,641, Cl. 343-17.208.

Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., to Eastman Kodak Company. Polyester modified with alkyl- or alkenylsuccinic anhydrides. 4,375,540, Cl. 528-302.000.

Jud, John J.: *See*—
Rosanio, Ronald R.; Jud, John J.; and Guaragno, Anthony, 4,375,155, Cl. 62-256.000.

Judd, Ian D.: *See*—
Evans, John M.; Judd, Ian D.; Lovie, Richard H.; and Minshull, John F., 4,375,654, Cl. 358-260.000.

Jung, Michael: *See*—
Bey, Philippe; Jung, Michael; and Gerhart, Fritz, 4,375,477, Cl. 424-319.000.

Jyouraku, Masanori: *See*—
Kuwabara, Kiyoaki; and Jyouraku, Masanori, 4,375,481, Cl. 426-93.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Mitsuishi, Akio, 4,375,338, Cl. 400-124.000.

K.K. Toyota Chuo Kenkyusho, et al.: *See*—
Kato, Takayuki; Tsuji, Toshio; and Konishi, Kiyokazu, 4,375,672, Cl. 364-551.000.

Kajiyama, Ryuichi, to Mitsubishi Denki Kabushiki Kaisha. Floor selector system for elevator system. 4,375,249, Cl. 187-29.00R.

Kalbskoph, Reinhard: *See*—
Genequand, Pierre; Hindi, Guy N.; Gross, Daniel; Pfeifer, Hermann; and Kalbskoph, Reinhard, 4,375,380, Cl. 156-72.000.

Kalmar, Nicholas. Process for the in situ recovery of both petroleum and inorganic mineral content of an oil shale deposit. 4,375,302, Cl. 299-4.000.

Kam, John B.: *See*—
Davida, George I.; Wells, David L.; and Kam, John B., 4,375,579, Cl. 178-22.100.

Kaminski, Joan M.: *See*—
Horodysky, Andrew G.; and Kaminski, Joan M., 4,375,419, Cl. 252-46.700.

Kamiya, Soji: *See*—
Nara, Tamotsu; and Kamiya, Soji, 4,375,499, Cl. 428-653.000.
Nara, Tamotsu; and Kamiya, Soji, 4,375,500, Cl. 428-653.000.

Kamyr AB: *See*—
Richter, Johan C. F. C.; and Richter, Ole J., 4,375,410, Cl. 210-323.200.

Kanemaru, Kiyoshi: *See*—
Abe, Nobuyoshi; Kanemaru, Kiyoshi; and Yokoyama, Minoru, 4,375,373, Cl. 106-308.00B.

Kasner, William H.: *See*—
Taylor, Lyle H.; and Kasner, William H., 4,375,689, Cl. 372-70.000.

Katagiri, Katsuo; and Shimazu, Kiyotaka, to Osaka Gas Company, Ltd. Gas purification system. 4,375,450, Cl. 422-170.000.

Kato, Chiaki, to Sumimoto Electric Industries, Ltd. Fixing apparatus. 4,375,201, Cl. 118-60.000.

Kato, Takayuki; Tsuji, Toshio; and Konishi, Kiyokazu, to K.K. Toyota Chuo Kenkyusho, et al. Engine analyzer. 4,375,672, Cl. 364-551.000.

Katsura, Akihiko: *See*—
Tohyama, Yoshikuni; and Katsura, Akihiko, 4,375,331, Cl. 355-51.000.

Katz, Michael M.; Hashem, Mohamed M.; and Talley, Charles P., to GAF Corporation. Method of removing dioxane from phosphate ester surfactants. 4,375,437, Cl. 260-990.000.

Kawada Co., Ltd.: *See*—
Chatani, Yasuhi, 4,375,139, Cl. 46-221.000.

Kawamata, Motoo; Ohshima, Kazuhi; Onofusa, Mitsuo; Kudoh, Akihide; Kotani, Makoto; and Tsuda, Takeshi, to Mitsui Toatsu Chemicals, Inc. Process for producing ortho-alkylated phenols from anisoles. 4,375,566, Cl. 568-716.000.

Kawamura, Takafumi: *See*—
Hara, Hisanori; Kawamura, Takafemi; Takamori, Osamu; and Ieko, Wako, 4,375,388, Cl. 202-239.000.

Kawasaki Steel Corp.: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,375,283, Cl. 266-44.000.

Keller, Scott C.; and Ruth, Linus C., to RCA Corporation. Non-loading digital voltmeter. 4,375,616, Cl. 324-99.00D.

Kemp, Wayne T.; and Saponara, Domenick, to Raytheon Company. Self-clean oven. 4,375,213, Cl. 126-21.00A.

Kemper, Winfried: *See*—
Eichmanns, Herbert; Meyer, Wilhelm; and Kemper, Winfried, 4,375,158, Cl. 68-205.00R.

Kendall Company, The: *See*—
Arkans, Edward J., 4,375,217, Cl. 128-24.00R.

Kennedy, E. Flynt: *See*—
Washecheck, Paul H.; Liu, Andrew T. C.; and Kennedy, E. Flynt, 4,375,360, Cl. 44-53.000.

Kennedy, Raymond: *See*—
Cole, Raymond; Kennedy, Raymond; and McCluskey, Lincoln, 4,375,445, Cl. 264-250.000.

Keshavan, Hampapur R.: *See*—
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,375,681, Cl. 370-16.000.
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,375,682, Cl. 370-16.000.

Kightlinger, Adrian P.; Speakman, Edwin L.; and Van Duzee, Grant T., to Standard Brands Incorporated. Stable liquid, amylopectin starch graft copolymer compositions. 4,375,535, Cl. 527-313.000.

Kim, Dongsung R., to Burroughs Corporation. Apparatus for detecting, correcting and logging single bit memory read errors using syndrome generating and decoding circuitry. 4,375,664, Cl. 364-200.000.

Kimberly-Clark Corporation: *See*—
Appel, David W.; and Chung, Raymond, 4,375,448, Cl. 264-518.000.
Chung, Raymond, 4,375,447, Cl. 264-518.000.

Kipperman, Antoon H. M.; and Habraken, Lambertus E. H., to Holec N.V. Process for producing electrically-conductive articles from silicon powder by treatment in the presence of boron oxide. 4,375,443, Cl. 264-61.000.

Kircher, Morton S., to Olin Corporation. Electrolyte circulation in an electrolytic cell. 4,375,400, Cl. 204-237.000.

Kishi, Mitsuhiro. Lifting apparatus. 4,375,248, Cl. 187-18.000.

Kitchell, Thorne C., to Union Camp Corporation. Pad and blank therefor to support an object in a shipping container. 4,375,261, Cl. 206-320.000.

Klahr, Erhard: *See*—
Greif, Norbert; Klahr, Erhard; and Trieselt, Wolfgang, 4,375,565, Cl. 568-622.000.

Klein-Albenhausen, Heinrich. Silo combination for mixing stored material. 4,375,335, Cl. 366-15.000.

Klein, Joseph T.: *See*—
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,375,471, Cl. 424-258.000.

Klein, Philipp H.: *See*—
Schneider, Irwin; Collins, William C.; Imber, Oscar; and Klein, Philipp H., 4,375,429, Cl. 252-584.000.

Klinkwitz, Kurt: *See*—
Dorrie, Horst; and Klinkwitz, Kurt, 4,375,642, Cl. 343-895.000.

Klose, George J.: *See*—
Buck, Gordon H.; Ferdinand, Scott A.; and Klose, George J., 4,375,666, Cl. 364-410.000.

Kluver, Leroy M.; and Kunkle, Richard W., to Paul Revere Corporation, The. Ejection mechanism for a round baler. 4,375,187, Cl. 100-88.000.

Knapton, Arthur G.; and Selman, Gordon L., to Johnson, Matthey & Co., Limited. Catalytic fibre packs for ammonia oxidation. 4,375,426, Cl. 252-472.000.

Knoblauch, Jack R.: *See*—
Pergler, Charles C.; and Knoblauch, Jack R., 4,375,301, Cl. 297-313.000.

Knollmueller, Karl O.; and Fedynyshyn, Theodore H., to Olin Corporation. Selected 4-hydroxyphenyl anilino alkoxysilanes and their use as antioxidants. 4,375,420, Cl. 252-78.300.

Koch, Keith E., to Caterpillar Tractor Co. Bobbin assembly. 4,375,279, Cl. 242-156.000.

Koehler, Richard F., Jr.: *See*—
Lewis, Richard B.; Koehler, Richard F., Jr.; and Connors, Edward W., 4,375,673, Cl. 364-555.000.

Kohler, Thomas P., to Beatrice Foods Co. Electronic fluorescent lamp ballast. 4,375,608, Cl. 315-307.000.

Koiso, Junichi: *See*—
Matsumoto, Kenichi; Ura, Hiroaki; Ogino, Tamio; and Koiso, Junichi, 4,375,327, Cl. 355-3.0FU.

Kojima, Keiichi: *See*—
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,375,632, Cl. 338-214.000.

Konars, Clement R.: *See*—
Quinci, Emanuel; and Konars, Clement R., 4,375,190, Cl. 101-177.000.

Konarski, Mieczyslaw, to General Electric Company. Variable geometry exhaust nozzle. 4,375,276, Cl. 239-265.290.

Konishi, Kiyokazu: *See*—
Kato, Takayuki; Tsuji, Toshio; and Konishi, Kiyokazu, 4,375,672, Cl. 364-551.000.

Konishiroku Photo Industry Co., Inc.: *See*—
Matsumoto, Kenichi; Ura, Hiroaki; Ogino, Tamio; and Koiso, Junichi, 4,375,327, Cl. 355-3.0FU.
Konrad, Charles E., to General Electric Company. Shunt-wound control for on-road vehicle. 4,375,603, Cl. 318-139.000.
Koon, Norman C.; and Schindler, Albert I., to United States of America, Navy. Use of cubic rare earth-iron laves phase intermetallic compounds as magnetostrictive transducer materials. 4,375,372, Cl. 75-123.00E.
Koppe, Erwin. Stove for burning solid fuel. 4,375,215, Cl. 126-200.000.
Koppers Company, Inc.: *See*—
Lindgren, Carl, 4,375,389, Cl. 202-241.000.
Korth, Gerald C.; and Gaukel, John J., to Memory Control Technology Corporation. Universal digital data copying system. 4,375,655, Cl. 360-15.000.
Kosonocky, Walter F., to United States of America, Air Force. Method of implementing uniform background charge subtraction in a radiation sensing array. 4,375,597, Cl. 307-311.000.
Kotani, Makoto: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Onofusa, Mitsuo; Kudoh, Akihide; Kotani, Makoto; and Tsuda, Takeshi, 4,375,566, Cl. 568-716.000.
Kralowetz, Johanna; and Tischler, Manfred, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft mbH. Machine tool for machining crankshafts and control system for the machine tool. 4,375,670, Cl. 364-474.000.
Kramer, Petrus A., to Shell Oil Company. Process for the preparation of dihalovinylcyclopropane carboxylic acid. 4,375,557, Cl. 562-500.000.
Kraus, Menahem A.; Livni, Avinoam; and Frommer, Moshe A., to A. T. Ramot Plastics Ltd. Diaphragm pump. 4,375,346, Cl. 417-388.000.
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Arcara, Samuel A.; and Hoopes, Howard S., 4,375,663, Cl. 364-200.000.
Clark, Alexander H.; O'Neil, John E.; and Tenney, Albert S., III, 4,375,333, Cl. 356-47.000.
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Le Vantine, Allan D. Forward view mirror for bicycles. 4,375,316, Cl. 350-302.000.
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Drakoff, Raymond, 4,375,465, Cl. 424-175.000.
Rubin, Fred K.; and Van Blarcom, David, 4,375,421, Cl. 252-110.000.
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Lewis, Richard B.; Koehler, Richard F., Jr.; and Connors, Edward W., to Xerox Corporation. Charge spectrograph. 4,375,673, Cl. 364-555.000.
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Lill, Melvin H., to FMC Corporation. Method for adjusting the toe of the steerable wheels on a vehicle relative to the average rolling direction of the vehicle nonsteerable wheels. 4,375,130, Cl. 33-228.000.
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Linder, Charles L. Cabinet and table unit for a vehicle. 4,375,306, Cl. 312-250.000.
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Linquist, Wayne, to Ex-Cell-O Corporation. Manual keyway punching tool. 4,375,128, Cl. 30-242.000.
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Santschi, William R., 4,375,212, Cl. 125-14.000.

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Evans, John M.; Judd, Ian D.; Lovie, Richard H.; and Minshull, John F., 4,375,654, Cl. 358-260.000.

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Warner, Paul L., Jr.; Luber, Edward J., Jr.; Somerville, William A.; and Zusi, F. Christopher, 4,375,545, Cl. 546-263.000.

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Luetzow, Edwin J., to Teltec, Inc. Process of making a multiple conductor flexible wire cable. 4,375,379, Cl. 156-52.000.

Lyman, John B., to Whirlpool Corporation. Floor cleaner motor mount. 4,375,117, Cl. 15-377.000.

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Magers, Wallace F., to Realex Corporation. Down-locking dispensing pump with side-orificed, product-mixing ball hold-down. 4,375,266, Cl. 222-321.000.

Main, Jim I. Method of making a contact lens material and a lens therefrom. 4,375,534, Cl. 526-227.000.

Mancini, William; Weiss, Carl; and Grohoski, Theodore, to Timex Corporation. Tool kit for watch strap replacement. 4,375,259, Cl. 206-223.000.

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Border, Gary C.; and Patznick, Richard A., 4,375,369, Cl. 65-29.000.

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Parsons, Robert W., 4,375,238, Cl. 166-252.000.

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Martinelli, Lawrence G., to Verbatim Corporation. Cleaning disk. 4,375,658, Cl. 360-128.000.

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McEntire, Edward E.; and Nieh, Edward C. Y., to Texaco Inc. Purification of methacrylamidopropyltrimethyl-ammonium chloride with nonionic organic resins. 4,375,558, Cl. 564-206.000.

McGraw-Edison Company: *See—*
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Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,375,681, Cl. 370-16.000.
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Rowden, Clifford E.; McLean, Gregory J.; Franklin, Joseph E.; and Demianczuk, Dionisyj W., 4,375,376, Cl. 148-12.00F.

McNeely, Robert T., to Caterpillar Tractor Co. Roller suspension. 4,375,247, Cl. 187-9.00R.

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Melillo, David G.; and Ryan, Kenneth M., to Merck & Co., Inc. Process for the preparation of 6-hydroxymethyl-2-(β-aminoethylthio)-1-carbadethiapen-2-em-3-carboxylic acid. 4,375,433, Cl. 260-245.20T.

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Korth, Gerald C.; and Gaukel, John J., 4,375,655, Cl. 360-15.000.

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Willard, Alvin K.; Novello, Frederick C.; Hoffman, William F.; and Cragoe, Edward J., Jr., 4,375,475, Cl. 424-279.000.

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Reiff, Fritz; Wintermeyer, Willi; Wittmann, Rolf; Butzke, Jurgen; and Muller, Peter, 4,375,393, Cl. 204-79.000.

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Debono, Manuel; Merkel, Kurt E.; Weeks, Robert E.; and Cole, Herald J., 4,375,513, Cl. 435-169.000.

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Bey, Philippe; Jung, Michael; and Gerhart, Fritz, 4,375,477, Cl. 424-319.000.

Merry, Ted G.: *See—*
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Meth-Cohn, Otto; and Narine, Brahma, to Croda Synthetic Chemicals Limited. Fused pyridines. 4,375,544, Cl. 546-114.000.

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Elsas, Norman E.; and Middleton, James B., 4,375,175, Cl. 83-18.000.

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Miller, Robert C.: *See—*
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Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; and Yordanov, Nikolay V., to Institute Po Metaloznanie I Technologia NA Metalite. Apparatus for soldering the winding to the commutator of an electric machine. 4,375,270, Cl. 228-37.000.

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Evans, John M.; Judd, Ian D.; Lovie, Richard H.; and Minshull, John F., 4,375,654, Cl. 358-260.000.

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Tabata, Norikazu; Yagi, Shigenori; Ueno, Takanori; and Ogawa, Shuji, 4,375,690, Cl. 372-82.000.

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Mitsuishi, Akio, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Wire dot print head. 4,375,338, Cl. 400-124.000.

Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, to Sumitomo Electric Industries, Ltd.; and Nippondenso Co., Ltd. Ignition cables. 4,375,632, Cl. 338-214.000.

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Dwyer, Francis G.; Chu, Pochen; and Cormier, William E., Jr., 4,375,458, Cl. 423-329.000.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,375,419, Cl. 252-46.700.
Jan, Raymond J.; and Montgomery, Alistair H., 4,375,452, Cl. 423-7.000.
Young, Lewis B., 4,375,573, Cl. 585-467.000.

Molina, Orlando G., to Rockwell International Corporation. Method for penetrant inspection employing an etchant penetrant. 4,375,384, Cl. 156-626.000.

Moller, Knut N. A. Lid mounting apparatus. 4,375,144, Cl. 53-309.000.

Molloy, James J.: *See*—
Dyer, Stanley; Molloy, James J.; and Walker, Donald A., 4,375,339, Cl. 400-249.000.

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Baer, Massimo, 4,375,532, Cl. 525-310.000.
Cohen, Saul M.; and LeBlanc, John R., 4,375,537, Cl. 528-230.000.
Cohen, Saul M.; and LeBlanc, John R., 4,375,538, Cl. 528-230.000.

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Jan, Raymond J.; and Montgomery, Alistair H., 4,375,452, Cl. 423-7.000.

Montgomery, James W.: *See*—
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Mori, Kouji; Segawa, Hideo; Sakurai, Kouichi; and Itagaki, Masanori, to Ricoh Co., Ltd. Photoelectric element, picture-reading device including the same, and process for production thereof. 4,375,644, Cl. 357-30.000.

Mori, Toshimichi: *See*—
Ohtani, Saburo; Mori, Toshimichi; and Izumi, Soichi, 4,375,378, Cl. 148-12.00B.

Morin, Andre M. R., to SOVAM. Hauling vehicle for large aircraft. 4,375,244, Cl. 180-14.00C.

Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary type electrostatic spray painting device. 4,375,277, Cl. 239-703.000.

Morscheck, Timothy J., to Eaton Corporation. Automatic transmission. 4,375,171, Cl. 74-331.000.

Morton, Anthony J.: *See*—
Harvey, Kenneth; Hayes, Harry; and Morton, Anthony J., 4,375,460, Cl. 424-52.000.

Morton, Edward W.; Dooley, Thomas E.; and O'Mullan, Daniel W., to Westinghouse Electric Corp. Compact lamp unit having plug-in fluorescent lamp and module components. 4,375,607, Cl. 315-56.000.

Moss, Gerald, to Exxon Research and Engineering Co. Gasification of ash-containing solid fuels. 4,375,362, Cl. 48-197.00R.

Mosse, Richard W. E.; and Vatne, Kaare B., to Novus Corp. N.V. Packaging, particularly aseptic packaging of aseptic products in cartons. 4,375,145, Cl. 53-425.000.

Motorola, Inc.: *See*—
Hollingsworth, Allen H.; and Deutschle, Alan G., 4,375,622, Cl. 333-126.000.
Ulmer, Richard W.; and Whatley, Roger A., 4,375,595, Cl. 307-297.000.

Mott, Philip J., to Borg-Warner Corporation. Deflection limiting stop for a diaphragm spring clutch. 4,375,253, Cl. 192-89.00B.

Mouly, Raymond J., to PPG Industries, Inc. Thermal control in a method of bidirectionally attenuating glass in a float process. 4,375,370, Cl. 65-99.500.

Muller, Friedrich-E.; Oesterwind, G. Wolfgang; and Nothdurft, Jurgen, to Anton Piller GmbH & Co. KG. Centrifugal chamber filter for separating solids from a gas stream. 4,375,365, Cl. 55-346.000.

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Murphy, Joyce O. Hammock, especially baby hammock. 4,375,110, Cl. 5-98.00B.

Murray, Bruce A.: *See*—
Anderson, Nathaniel C.; Daby, Larry E.; Gravdahl, Vincent D.; McCaffrey, Patrick M.; Murray, Bruce A.; and Wright, Bruce W., 4,375,390, Cl. 204-15.000.

Muszynski, Larry C., to Shell Oil Company. Vinyl ester polymer coacrete compositions comprising fly ash. 4,375,489, Cl. 428-36.000.

Muzumdar, Deepak; Levine, William; Suarez, Gerry; Schneider, Rolf; and Wagner, Theodore W., to Siemens Corporation. Modular telephone keyset structure. 4,375,584, Cl. 179-100.00D.

Myers, George D., deceased (by Myers, Virginia K., administratrix), to Ashland Oil, Inc. Addition of chlorine to regenerator. 4,375,404, Cl. 208-120.000.

Myers, John G.: *See*—
Zupanovich, John D.; Myers, John G.; and Walker, Jerry L., 4,375,526, Cl. 524-436.000.

Myers, Virginia K., administratrix: *See*—
Myers, George D., deceased, 4,375,404, Cl. 208-120.000.

Naegeli, Peter: *See*—
Helmlinger, Daniel; and Naegeli, Peter, 4,375,428, Cl. 252-522.00R.

Nagai, Toshihisa: *See*—
Leow, Chon H.; and Nagai, Toshihisa, 4,375,635, Cl. 340-146.30Q.

Nagaoka, Mituru; and Sumida, Sizuo, to Toyo Kogyo Co., Ltd. Windshield wiper device for automobiles. 4,375,610, Cl. 318-444.000.

Nagy, Geza: *See*—
Havas, Jeno; Nagy, Geza; Porjesz, Emma; and Pungor, Erno, 4,375,399, Cl. 204-195.00B.

Nalco Chemical Company: *See*—
Fong, Dodd W.; and Allain, Ronald J., 4,375,529, Cl. 524-555.000.

Nalewajek, David; Recla, Eugene B.; Wiles, Robert A.; and Eibeck, Richard E., to Allied Corporation. Recovery of gadolinium and gallium oxides. 4,375,453, Cl. 423-21.100.

Nara, Tamotsu; and Kamiya, Soji, to Taiho Kogyo Co., Ltd. Aluminum-tin base bearing alloy and composite. 4,375,499, Cl. 428-653.000.

Nara, Tamotsu; and Kamiya, Soji, to Taiho Kogyo Co., Ltd. Aluminum-tin base bearing alloy and composite. 4,375,500, Cl. 428-653.000.

Narine, Brahma: *See*—
Meth-Cohn, Otto; and Narine, Brahma, 4,375,544, Cl. 546-114.000.

Natale, Peter J.: *See*—
Lombardo, Igino; and Natale, Peter J., 4,375,347, Cl. 425-10.000.

National Semiconductor Corporation: *See*—
Jett, William B., Jr., 4,375,618, Cl. 329-103.000.
Sauer, Don R., 4,375,580, Cl. 179-1.0GS.

Negishi, Fumio: *See*—
Ota, Akiho; and Negishi, Fumio, 4,375,442, Cl. 264-25.000.

Nemo Industries, Inc.: *See*—
Elsas, Norman E.; and Middleton, James B., 4,375,175, Cl. 83-18.000.

Neumeister, John W.: *See*—
Seligman, Peter F.; and Neumeister, John W., 4,375,451, Cl. 422-281.000.

Newkirk, James S., to Eastman Kodak Company. Fuser member. 4,375,505, Cl. 430-99.000.

Ney, Andrew L., to SPS Technologies, Inc. Method and apparatus for tightening threaded fastener assemblies. 4,375,123, Cl. 29-407.000.

Ng, Steve Y. W.: *See*—
Wingard, Robert E., Jr.; Ng, Steve Y. W.; and Swanson, Sally A., 4,375,357, Cl. 8-647.000.

NGK Spark Plug Co., Ltd.: *See*—
Watanabe, Masakazu; Okuno, Akiyasu; Fukuura, Isamu; and Matsuo, Yasushi, 4,375,517, Cl. 501-87.000.

Nicholas, Merle E.; and Renier, James J., to Honeywell Inc. Heater for catalytic type propane or organic gas detector. 4,375,353, Cl. 431-13.000.

Nicholas, Paul P.: *See*—
Kroenke, William J.; and Nicholas, Paul P., 4,375,569, Cl. 570-224.000.

Nichols, George H., to United States of America, National Aeronautics and Space Administration. Aircraft canopy lock. 4,375,281, Cl. 244-121.000.

Nicolaides, John D. Free wing flyer. 4,375,280, Cl. 244-13.000.

Nieh, Edward C. Y.: *See*—
McEntire, Edward E.; and Nieh, Edward C. Y., 4,375,558, Cl. 564-206.000.

Nikiforakis, Paraskeyas. Continuous ignition turbo motor. 4,375,150, Cl. 60-39.340.

Nippon Air Brake Co., Ltd.: *See*—
Tamamori, Hideo, 4,375,303, Cl. 303-40.000.

Nippon Carbide Kogyo Kabushiki Kaisha: *See*—
Kuwabara, Kiyoaki; and Jyouraku, Masanori, 4,375,481, Cl. 426-93.000.

Nippon Chemical Industrial Co., Ltd.: *See*—
Abe, Nobuyoshi; Kanemaru, Kiyoshi; and Yokoyama, Minoru, 4,375,373, Cl. 106-308.00B.

Nippon Electric Co., Ltd.: *See*—
Hoshi, Katsuji, 4,375,596, Cl. 307-297.000.
Taguchi, Noboru, 4,375,688, Cl. 372-65.000.

Nippon Steel Corporation: *See*—
Hara, Hisanori; Kawamura, Takafumi; Takamori, Osamu; and Ieko, Wako, 4,375,388, Cl. 202-239.000.
Ohtani, Saburo; Mori, Toshimichi; and Izumi, Soichi, 4,375,378, Cl. 148-12.00B.

Nippondenso Co., Ltd.: *See*—
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,375,632, Cl. 338-214.000.
Nissan Motor Company, Ltd.: *See*—
Furuhashi, Syoji; and Higashiyama, Kazuhiro, 4,375,208, Cl. 123-339.000.
Ohara, Yoshiaki; and Ohgami, Masaaki, 4,375,210, Cl. 123-440.000.
Ohara, Yoshiaki; and Shikata, Makoto, 4,375,211, Cl. 123-440.000.
Yamamoto, Tadahiro, 4,375,204, Cl. 123-52.00M.
Nix, George J.: *See*—
Barrington, Burchus Q.; and Nix, George J., 4,375,239, Cl. 166-336.000.
Nolek System AB: *See*—
Persson, John, 4,375,297, Cl. 285-12.000.
Noll, R. W., to Acutherm, Inc. Air conditioning control equipment. 4,375,224, Cl. 137-486.000.
Nonomura, Keisaku: *See*—
Funada, Fumiaki; Nonomura, Keisaku; Uede, Hisashi; and Wada, Tomio, 4,375,317, Cl. 350-335.000.
Norlin Industries, Inc.: *See*—
Starkey, David T., 4,375,176, Cl. 84-1.010.
Northern Petrochemical Company: *See*—
Ross, James F., 4,375,531, Cl. 525-93.000.
Nothdurft, Jurgen: *See*—
Muller, Friedrich-E.; Oesterwind, G. Wolfgang; and Nothdurft, Jurgen, 4,375,365, Cl. 55-346.000.
Muller, Friedrich-E.; Oesterwind, G. Wolfgang; and Nothdurft, Jurgen, 4,375,366, Cl. 55-416.000.
Novello, Frederick C.: *See*—
Willard, Alvin K.; Novello, Frederick C.; Hoffman, William F.; and Cragoe, Edward J., Jr., 4,375,475, Cl. 424-279.000.
Novus Corp. N.V.: *See*—
Mosse, Richard W. E.; and Vatne, Kaare B., 4,375,145, Cl. 53-425.000.
Nowakowski, Peter M.; Boberski, William G.; and Seiner, Jerome A., to PPG Industries, Inc. Metal condensed phosphate hardener coated with reaction product from a metal aluminate and/or a metal borate. 4,375,496, Cl. 428-403.000.
Nusbickel, Edward M., Jr.; Hutchinson, William L.; and Albert, James E., to Bethlehem Steel Corporation. Ultrasonic transducer suspension system for on-line high speed ultrasonic inspection of flat rolled products. 4,375,167, Cl. 73-644.000.
Nute, William R.: *See*—
Tate, Stanley H.; Roberts, Donald K.; Hollingsworth, Carl E.; and Nute, William R., 4,375,660, Cl. 361-50.000.
Oblander, Kurt: *See*—
Thoma, Frank; and Oblander, Kurt, 4,375,274, Cl. 239-117.000.
Occidental Chemical Corporation: *See*—
Baker, Kenneth D.; and Rymwid, Yvonne, 4,375,392, Cl. 204-43.00N.
Occidental Research Corporation: *See*—
Durai-Swamy, Kandaswamy, 4,375,402, Cl. 208-8.00R.
Graham, James R.; and Huntington, John G., 4,375,553, Cl. 562-408.000.
Oce-Nederland B.V.: *See*—
Ophey, Petrus J. M., 4,375,330, Cl. 355-14.00R.
Oderland, Karl-Erik I.: *See*—
Josefsson, Lars G.; Oderland, Karl-Erik I.; and Winnberg, Jan-Olov, 4,375,641, Cl. 343-17.20R.
Oesterwind, G. Wolfgang: *See*—
Muller, Friedrich-E.; Oesterwind, G. Wolfgang; and Nothdurft, Jurgen, 4,375,365, Cl. 55-346.000.
Muller, Friedrich-E.; Oesterwind, G. Wolfgang; and Nothdurft, Jurgen, 4,375,366, Cl. 55-416.000.
Ogawa, Shuji: *See*—
Tabata, Norikazu; Yagi, Shigenori; Ueno, Takanori; and Ogawa, Shuji, 4,375,690, Cl. 372-82.000.
Ogino, Tamio: *See*—
Matsumoto, Kenichi; Ura, Hiroaki; Ogino, Tamio; and Koiso, Junichi, 4,375,327, Cl. 355-3.0FU.
Ohara, Yoshiaki; and Ohgami, Masaaki, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system. 4,375,210, Cl. 123-440.000.
Ohara, Yoshiaki; and Shikata, Makoto, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system. 4,375,211, Cl. 123-440.000.
Ohgami, Masaaki: *See*—
Ohara, Yoshiaki; and Ohgami, Masaaki, 4,375,210, Cl. 123-440.000.
Ohshima, Kazushi: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Onofusa, Mitsuo; Kudoh, Akihide; Kotani, Makoto; and Tsuda, Takeshi, 4,375,566, Cl. 568-716.000.
Ohtani, Hiroo; and Watanabe, Seiichi, to Sumitomo Metal Industries, Limited. Steels which are useful in fabricating pressure vessels. 4,375,377, Cl. 148-12.00F.
Ohtani, Saburo; Mori, Toshimichi; and Izumi, Soichi, to Nippon Steel Corporation. Process for producing spheroidized wire rod. 4,375,378, Cl. 148-12.00B.
Okabe, Yukio; and Watanabe, Yasuaki, to Victor Company of Japan, Limited. Color television receiver with means for disabling VIR correction during reproduction of recorded broadcast signals. 4,375,646, Cl. 358-21.00V.
Okamoto, Yoshio: *See*—
Yuki, Heimei; and Okamoto, Yoshio, 4,375,495, Cl. 428-402.000.
Okano, Shuji: *See*—
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,375,446, Cl. 264-518.000.
O'Keefe, David B.; and Miller, Robert C., to Honeywell Information Systems Inc. Scrolling display refresh memory address generation apparatus. 4,375,638, Cl. 340-726.000.
Okimoto, Kiyomi: *See*—
Fukui, Kiyoshi; and Okimoto, Kiyomi, 4,375,554, Cl. 562-440.000.
Okuno, Akiyasu: *See*—
Watanabe, Masakazu; Okuno, Akiyasu; Fukaura, Isamu; and Matsuo, Yasushi, 4,375,517, Cl. 501-87.000.
Olin Corporation: *See*—
Bosch, Yves; Ollivier, Jean; and Almeras, Roland, 4,375,269, Cl. 227-8.000.
Kircher, Morton S., 4,375,400, Cl. 204-237.000.
Knollmueller, Karl O.; and Fedynyshyn, Theodore H., 4,375,420, Cl. 252-78.300.
Pryor, Michael J., 4,375,234, Cl. 164-452.000.
Ollivier, Jean: *See*—
Bosch, Yves; Ollivier, Jean; and Almeras, Roland, 4,375,269, Cl. 227-8.000.
O'Mullan, Daniel W.: *See*—
Morton, Edward W.; Dooley, Thomas E.; and O'Mullan, Daniel W., 4,375,607, Cl. 315-56.000.
O'Neil, John E.: *See*—
Clark, Alexander H.; O'Neil, John E.; and Tenney, Albert S., III, 4,375,333, Cl. 356-47.000.
Onofusa, Mitsuo: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Onofusa, Mitsuo; Kudoh, Akihide; Kotani, Makoto; and Tsuda, Takeshi, 4,375,566, Cl. 568-716.000.
Onotera, Larry Y.; and Dueckman, Leonard, to AEL Microtel, Ltd. Apparatus for testing microwave radios having 35 MHz if using test equipment designed for 70 MHz IF. 4,375,698, Cl. 455-67.000.
Ophey, Petrus J. M., to Oce-Nederland B.V. Control circuit in an electrophotographic copying machine. 4,375,330, Cl. 355-14.00R.
Oppermann, Walter J.: *See*—
Maroszek, Raymond V.; and Oppermann, Walter J., 4,375,482, Cl. 426-124.000.
Ortho Diagnostics, Inc.: *See*—
Lombardo, Igino; and Natale, Peter J., 4,375,347, Cl. 425-10.000.
Orthoefer, Frank T.: *See*—
Bradford, Marion M.; Orthoefer, Frank T.; and Wright, Kenneth N., 4,375,431, Cl. 260-123.500.
Osaka Gas Company, Ltd.: *See*—
Katagiri, Katsuo; and Shimazu, Kiyotaka, 4,375,450, Cl. 422-170.000.
Ota, Akiho; and Negishi, Fumio, to Yoshino Kogyosho Co., Ltd. Method for producing polyester container. 4,375,442, Cl. 264-25.000.
Otis Engineering Corporation: *See*—
Churchman, Ronald K., 4,375,237, Cl. 166-117.500.
Outboard Marine Corporation: *See*—
Baltz, Gene F.; and Breckenfeld, Paul W., 4,375,206, Cl. 123-187.50R.
Stevens, Myron T., 4,375,356, Cl. 440-112.000.
Owens-Illinois, Inc.: *See*—
Johnson, William E.; Michalski, Thomas F.; and Ryan, William H., 4,375,669, Cl. 364-473.000.
Oya, Tetsuro: *See*—
Inagaki, Tetsuhiko; Iwata, Takashi; Oya, Tetsuro; and Imura, Toshinori, 4,375,323, Cl. 354-64.000.
P. D. George Company, The: *See*—
Lange, Daniel J., 4,375,528, Cl. 524-538.000.
Pack, James D.: *See*—
Shensa, Mark J.; Satorius, Edgar H.; and Pack, James D., 4,375,692, Cl. 375-13.000.
Padgett, Arnold F., to Borg-Warner Corporation. Back-up mechanical seal. 4,375,291, Cl. 277-27.000.
Painter, Donald S.: *See*—
Graeme-Barber, Christopher; and Painter, Donald S., 4,375,199, Cl. 114-222.000.
Pako Corporation: *See*—
Jensen, Gerald A.; and Merry, Ted G., 4,375,490, Cl. 428-60.000.
Pariani, Ronald L.: *See*—
Berry, Milton E.; and Pariani, Ronald L., 4,375,352, Cl. 431-8.000.
Parikh, Sunil S.: *See*—
Pennie, Thomas W.; Parikh, Sunil S.; and Lowe, Charles, 4,375,520, Cl. 521-57.000.
Park, Hung S.; and Jorgensen, August H., Jr., to BF Goodrich Company, The. Polymerization process for carboxyl containing polymers. 4,375,533, Cl. 526-193.000.
Park, Kenneth K., to Xerox Corporation. Talking copiers and duplicators. 4,375,329, Cl. 355-14.00C.
Park, Lawrence D., Jr.; and Roever, William L., to Shell Oil Company. Hydrophone acoustic response chamber. 4,375,679, Cl. 367-13.000.
Parkes, Lincoln J. Prosthetic cart for animals. 4,375,203, Cl. 119-1.000.
Parsons, Robert W., to Marathon Oil Company. Method for recovery of oil from reservoirs of non-uniform permeability. 4,375,238, Cl. 166-252.000.
Patel, Mahesh G.: *See*—
Waitz, Jay A.; Patel, Mahesh G.; and Horan, Ann C., 4,375,542, Cl. 536-7.100.
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., to Exxon Research and Engineering Co. Method for producing microbial cells and use thereof to produce oxidation products. 4,375,515, Cl. 435-189.000.

Paterson, William G.: *See*—
Howell, Thomas J.; Paterson, William G.; and Pattison, Ian, 4,375,519, Cl. 521-31.000.

Patil, Balaji V., to Allegheny Ludlum Steel Corporation. Method for induction melting. 4,375,371, Cl. 75-10.00R.

Pattison, Ian: *See*—
Howell, Thomas J.; Paterson, William G.; and Pattison, Ian, 4,375,519, Cl. 521-31.000.

Patznick, Richard A.: *See*—
Border, Gary C.; and Patznick, Richard A., 4,375,369, Cl. 65-29.000.

Paul Revere Corporation, The: *See*—
Kluver, Leroy M.; and Kunkle, Richard W., 4,375,187, Cl. 100-88.000.

Pawloski, Chester E., to Dow Chemical Company, The. Substituted pyridinyl esters of 2-(1-oxoalkyloxy)ethyl carbamic acid. 4,375,546, Cl. 546-292.000.

Pawlowski, Edward J.: *See*—
Brock, George W.; Hyland, Robert N.; Pawlowski, Edward J.; and Shelledy, Frank B., 4,375,657, Cl. 360-125.000.

Pawson, Beverly A.: *See*—
Chan, Ka-Kong; and Pawson, Beverly A., 4,375,563, Cl. 568-308.000.

Pedgonay, John S. Muzzle control through application of torque derived from recoil energy. 4,375,136, Cl. 42-75.00B.

Peintures Corona S.A.: *See*—
Le Minez, Jean-Jacques; and Schmitt, Bernard, 4,375,498, Cl. 428-416.000.

Peled, Emanuel; and Lombardi, Anthony, to GTE Laboratories Incorporated. Electrochemical cell. 4,375,501, Cl. 429-94.000.

Pennie, Thomas W.; Parikh, Sunil S.; and Lowe, Charles, to Dart Industries Inc. Densification of particulate materials. 4,375,520, Cl. 521-57.000.

Pergler, Charles C.; and Knoblauch, Jack R., to Steelcase Inc. Chair seat adjustment assembly. 4,375,301, Cl. 297-313.000.

Perl, Richard L., to Tappan Company, The. Microwave oven energization circuit and components therefor. 4,375,587, Cl. 219-10.55B.

Persson, John, to Nolek System AB. Quick coupling device. 4,375,297, Cl. 285-12.000.

Peyronnet, Jacques: *See*—
Bechtiger, Charles G.; and Peyronnet, Jacques, 4,375,159, Cl. 70-366.000.

Pfeifer, Hermann: *See*—
Genequand, Pierre; Hindi, Guy N.; Gross, Daniel; Pfeifer, Hermann; and Kalbskoph, Reinhard, 4,375,380, Cl. 156-72.000.

Pfister, Theodor: *See*—
Blank, Heinz U.; Pfister, Theodor; and Putter, Rolf, 4,375,562, Cl. 564-430.000.

Pfizer Inc.: *See*—
Hageman, David L., 4,375,434, Cl. 260-245.20R.
Sklavounos, Constantine, 4,375,430, Cl. 260-112.50R.

Phillips Petroleum Company: *See*—
Garvert, Robert M., 4,375,405, Cl. 208-134.000.
Rowe, Fred, 4,375,524, Cl. 523-303.000.

Phillips Plastic Corp.: *See*—
Wollar, Burnell J.; and Schwind, Richard J., 4,375,342, Cl. 411-41.000.

Pioch, Richard P., to Eli Lilly and Company. N-Methyl-N'-2-[[(2-dimethylaminomethyl)-4-thiazolyl]methylthio]ethyl 2-nitro-1,1-ethenediamine. 4,375,547, Cl. 548-205.000.

Pirelli Cable Corporation: *See*—
Silver, David A.; Dima, Attila F.; and Seman, George W., 4,375,577, Cl. 174-22.00R.

Pitman, Herbert J.: *See*—
Harrison, Charles W.; Pitman, Herbert J.; Sequeira, Avilino, Jr.; and Begnaud, John D., 4,375,403, Cl. 208-33.000.

Plessey Handel Und Investments AG: *See*—
Harvey, Denis H., 4,375,640, Cl. 343-5.0INQ.

Polaroid Corporation: *See*—
Coppa, Richard J.; and Rodriguez, Marie T., 4,375,322, Cl. 354-27.000.
Holmes, William A., 4,375,324, Cl. 354-303.000.

Pollard, F. Ross: *See*—
Chapman, Stuart R.; and Pollard, F. Ross, 4,375,359, Cl. 44-51.000.

Porjesz, Emma: *See*—
Havas, Jeno; Nagy, Geza; Porjesz, Emma; and Pungor, Erno, 4,375,399, Cl. 204-195.00B.

Porter, Herschel F., to Duxsee Food Corp. Method and apparatus for segregating and separately recovering solids of different densities. 4,375,264, Cl. 209-606.000.

Power Automotive Equipment Pty. Ltd.: *See*—
Baillie, Robert J., 4,375,223, Cl. 137-116.500.

PPG Industries, Inc.: *See*—
Mouly, Raymond J., 4,375,370, Cl. 65-99.500.
Nowakowski, Peter M.; Boberski, William G.; and Seiner, Jerome A., 4,375,496, Cl. 428-403.000.
Tsai, Yih W., 4,375,235, Cl. 165-1.000.
Tsai, Yih W., 4,375,236, Cl. 165-1.000.

PRECITEC Gesellschaft fur Prazisionstechnik und Elektronik mbH & Co. Entwicklungs und Vertriebs-KG: *See*—
Schmall, Karl-Heinz; and Sendor, Piotr, 4,375,289, Cl. 273-371.000.

Prentice, Alan L., to Air Products and Chemicals, Inc. Lower power, freon refrigeration assisted air separation. 4,375,367, Cl. 62-13.000.

Primeau, John J. Air heating system. 4,375,154, Cl. 60-657.000.

Procter & Gamble Company, The: *See*—
Crisp, Peter N.; McRitchie, Allan C.; and Bell, John G., 4,375,416, Cl. 252-8.700.
Shuford, Charles E.; Clark, Faith D.; and Russell, Brenda J., 4,375,483, Cl. 426-330.600.

Pryor, Michael J., to Olin Corporation. Electromagnetic thin strip casting process. 4,375,234, Cl. 164-452.000.

Pungor, Erno: *See*—
Havas, Jeno; Nagy, Geza; Porjesz, Emma; and Pungor, Erno, 4,375,399, Cl. 204-195.00B.

Putter, Rolf: *See*—
Blank, Heinz U.; Pfister, Theodor; and Putter, Rolf, 4,375,562, Cl. 564-430.000.

Quinci, Emanuel; and Konars, Clement R., to Halm Instrument Co., Inc. Printing press having a plurality of printing stations. 4,375,190, Cl. 101-177.000.

Radelkis Elektrokemiai Mszergyarto Szovetkezet: *See*—
Havas, Jeno; Nagy, Geza; Porjesz, Emma; and Pungor, Erno, 4,375,399, Cl. 204-195.00B.

Radman, Anton J., Jr.; and Yudico, Ricardo, to International Business Machines Corporation. Magnetic head assembly with asymmetric slotted configuration. 4,375,656, Cl. 360-102.000.

Raytheon Company: *See*—
Kemp, Wayne T.; and Saponara, Domenick, 4,375,213, Cl. 126-21.00A.

RCA Corporation: *See*—
Halon, Bernard, 4,375,385, Cl. 156-643.000.
Keller, Scott C.; and Ruth, Linus C., 4,375,616, Cl. 324-99.00D.
Sinniger, Joseph O.; and Robbi, Anthony D., 4,375,209, Cl. 123-416.000.

Realex Corporation: *See*—
Magers, Wallace F., 4,375,266, Cl. 222-321.000.

Recla, Eugene B.: *See*—
Nalewajek, David; Recla, Eugene B.; Wiles, Robert A.; and Eibeck, Richard E., 4,375,453, Cl. 423-21.100.

Reiff, Fritz; Wintermeyer, Willi; Wittmann, Rolf; Butzke, Jurgen; and Muller, Peter, to Merck Patent Gesellschaft mit Beschrankter Haftung. Preparation of diacetone-ketogulonic acid. 4,375,393, Cl. 204-79.000.

Reinartz, Hans-Dieter: *See*—
Schopper, Bernd; Lowe, Derek; Reinartz, Hans-Dieter; and Tandler, Peter, 4,375,304, Cl. 303-52.000.

Renga, James M., to Dow Chemical Company, The. Process for making silyl ethers. 4,375,549, Cl. 556-470.000.

Renga, James M.: *See*—
Wang, Pen-Chung; and Renga, James M., 4,375,548, Cl. 556-470.000.

Renier, James J.: *See*—
Nicholas, Merle E.; and Renier, James J., 4,375,353, Cl. 431-13.000.

Republic Steel Corporation: *See*—
Rowden, Clifford E.; McLean, Gregory J.; Franklin, Joseph E.; and Demianczuk, Dionisyj W., 4,375,376, Cl. 148-12.00F.

Research-Cottrell, Inc.: *See*—
Van Hoesen, Harold E.; and Jakoplic, Richard, 4,375,364, Cl. 55-152.000.

Rexnord Inc.: *See*—
Ericson, Roger K., 4,375,292, Cl. 277-81.00R.

Richards, Elmer A.; Vandervoort, John R.; and Bogema, Edward J., to Eaton Corporation. Blocked change gear transmission utilizing resilient shifting mechanisms and improved jaw clutch assembly therefor. 4,375,172, Cl. 74-339.000.

Richmon, Joe B., to Merck & Co., Inc. Process for producing low calcium xanthan gums by fermentation. 4,375,512, Cl. 435-104.000.

Richter, Johan C. F. C.; and Richter, Ole J., to Kamyr AB. Reciprocating diffuser arrangements in an elongated vessel. 4,375,410, Cl. 210-323.200.

Richter, Ole J.: *See*—
Richter, Johan C. F. C.; and Richter, Ole J., 4,375,410, Cl. 210-323.200.

Ricoh Co., Ltd.: *See*—
Mori, Kouji; Segawa, Hideo; Sakurai, Kouichi; and Itagaki, Masanori, 4,375,644, Cl. 357-30.000.

Riemenschneider, Wilhelm: *See*—
Wegener, Peter; Riemenschneider, Wilhelm; and Ulmschneider, Dieter, 4,375,436, Cl. 260-545.00R.

Robbi, Anthony D.: *See*—
Sinniger, Joseph O.; and Robbi, Anthony D., 4,375,209, Cl. 123-416.000.

Robert Bosch GmbH: *See*—
Dorrie, Horst; and Klinkwitz, Kurt, 4,375,642, Cl. 343-895.000.
Sieber, Albrecht; Schulzke, Peter; Gunther, Dieter; and Steinbrenner, Ulrich, 4,375,207, Cl. 123-333.000.

Roberts, Donald K.: *See*—
Tate, Stanley H.; Roberts, Donald K.; Hollingsworth, Carl E.; and Nute, William R., 4,375,660, Cl. 361-50.000.

Roberts, Glenn M. Coin handling apparatus for a vending machine. 4,375,255, Cl. 194-1.00G.

Robinson, Leon H.; Speers, Jerry M.; and Barry, Adelber, to Exxon Production Research Co. Self-locking cable connector. 4,375,310, Cl. 339-88.00R.

Rock, Brian E., to General Electric Company. Grounding receptacle with low resistance ground. 4,375,307, Cl. 339-14.00R.

Rockwell International Corporation: *See*—
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,375,681, Cl. 370-16.000.

Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,375,682, Cl. 370-16.000.
Hallford, Ben R., 4,375,699, Cl. 455-327.000.
Hallford, Ben R., 4,375,700, Cl. 455-330.000.
Molina, Orlando G., 4,375,384, Cl. 156-626.000.
Rodriguez, Marie T.: *See*—
Coppa, Richard J.; and Rodriguez, Marie T., 4,375,322, Cl. 354-27.000.
Roever, William L.: *See*—
Park, Lawrence D., Jr.; and Roever, William L., 4,375,679, Cl. 367-13.000.
Rohm and Haas Company: *See*—
Howell, Thomas J.; Paterson, William G.; and Pattison, Ian, 4,375,519, Cl. 521-31.000.
Rohrbach, Peter H., to S I Handling Systems, Inc. Extensible drive shaft. 4,375,194, Cl. 104-166.000.
Rontgen Technische Dienst B.V.: *See*—
de Sterke, Arie, 4,375,165, Cl. 73-622.000.
Rosanio, Ronald R.; Jud, John J.; and Guaragno, Anthony, to Emhart Industries, Inc. Reach-in refrigerated display case with ambient air defrost. 4,375,155, Cl. 62-256.000.
Ross, James F., to Northern Petrochemical Company. High impact visbroken polymeric blends. 4,375,531, Cl. 525-93.000.
Rossmann, Axel; and Huther, Werner. Method of making a turbine blade having a metal core and a ceramic airfoil. 4,375,233, Cl. 164-9.000.
Rowden, Clifford E.; McLean, Gregory J.; Franklin, Joseph E.; and Demianczuk, Dioniswj W., to Republic Steel Corporation. Retarded aging, rimmed steel with good surface quality. 4,375,376, Cl. 148-12.00F.
Rowe, Fred, to Phillips Petroleum Company. Process control for flash concentrating solutions containing polyolefins. 4,375,524, Cl. 523-303.000.
Roy, Denis R. J.: *See*—
Teller, Aaron J.; Roy, Denis R. J.; and Lin, Shih K., 4,375,455, Cl. 423-210.000.
Rubin, Fred K.; and Van Blarcom, David, to Lever Brothers Company. Viscous compositions containing amido betaines and salts. 4,375,421, Cl. 252-110.000.
Rudzik, Allan D., to Upjohn Company, The. Method. 4,375,473, Cl. 424-269.000.
Rufer, Clemens: *See*—
Schroeder, Eberhard, deceased; and Rufer, Clemens, 4,375,479, Cl. 424-321.000.
Rundle, Gregory E.: *See*—
Sewell, Peter C.; and Rundle, Gregory E., 4,375,383, Cl. 156-291.000.
Russell, Brenda J.: *See*—
Shuford, Charles E.; Clark, Faith D.; and Russell, Brenda J., 4,375,483, Cl. 426-330.600.
Russell, George C.: *See*—
McBride, Paul; and Russell, George C., 4,375,539, Cl. 528-288.000.
Russo, Joseph J.: *See*—
Lee, Charleston R.; Russo, Joseph J.; Jeter, Shirley A.; and Sullivan, Thomas P., 4,375,484, Cl. 426-549.000.
Ruth, Linus C.: *See*—
Keller, Scott C.; and Ruth, Linus C., 4,375,616, Cl. 324-99.00D.
Ryan, Kenneth M.: *See*—
Melillo, David G.; and Ryan, Kenneth M., 4,375,433, Cl. 260-245.20T.
Ryan, William H.: *See*—
Johnson, William E.; Michalski, Thomas F.; and Ryan, William H., 4,375,669, Cl. 364-473.000.
Rymwid, Yvonne: *See*—
Baker, Kenneth D.; and Rymwid, Yvonne, 4,375,392, Cl. 204-43.00N.
S I Handling Systems, Inc.: *See*—
Rohrbach, Peter H., 4,375,194, Cl. 104-166.000.
Saari, Veikko R., to Bell Telephone Laboratories, Incorporated. FET Operational amplifier with increased output swing. 4,375,619, Cl. 330-253.000.
Saito, Mitsunori: *See*—
Sakuragi, Shiro; Imagawa, Kyoshiro; and Saito, Mitsunori, 4,375,314, Cl. 350-96.230.
Saito, Toshimasa: *See*—
Mikami, Hitoshi; Saito, Toshimasa; and Ichikawa, Hiroshi, 4,375,229, Cl. 140-102.000.
Sakai, Koichi, to Toko, Inc. Transistor circuit having two comparator levels. 4,375,598, Cl. 307-360.000.
Sakamoto, Gunji: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,375,283, Cl. 266-44.000.
Sakuragi, Shiro; Imagawa, Kyoshiro; and Saito, Mitsunori, to Agency of Industrial Science and Technology. Infrared optical fiber. 4,375,314, Cl. 350-96.230.
Sakurai, Kouichi: *See*—
Mori, Kouji; Segawa, Hideo; Sakurai, Kouichi; and Itagaki, Masanori, 4,375,644, Cl. 357-30.000.
Sakushin Kogyo Co., Ltd.: *See*—
Sato, Toshio, 4,375,350, Cl. 425-371.000.
Samson Aktiengesellschaft: *See*—
Erb, Helmut; and Leese, Werner, 4,375,273, Cl. 236-21.00R.
Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Free flowing SBR black masterbatch powder. 4,375,497, Cl. 428-407.000.
Santilli, Donald S., to Chevron Research Company. Fibrous clay compositions containing precalcined oxides. 4,375,406, Cl. 208-251.00H.
Santschi, William R., to Longyear Company. Concrete sawing machine propulsion control apparatus. 4,375,212, Cl. 125-14.000.
Saponara, Domenick: *See*—
Kemp, Wayne T.; and Saponara, Domenick, 4,375,213, Cl. 126-21.00A.
Sargent & Greenleaf, Inc.: *See*—
Bechtiger, Charles G.; and Peyronnet, Jacques, 4,375,159, Cl. 70-366.000.
Sato, Toshio, to Sakushin Kogyo Co., Ltd. Apparatus for forming elongated synthetic resin plate or sheet. 4,375,350, Cl. 425-371.000.
Satorina, Edgar H.: *See*—
Shensa, Mark J.; Satorina, Edgar H.; and Pack, James D., 4,375,692, Cl. 375-13.000.
Sauer, Don R., to National Semiconductor Corporation. AM Stereo receiver separation control. 4,375,580, Cl. 179-1.0GS.
Savic, Stanley D., to Zenith Radio Corporation. Overvoltage protection circuit for a television. 4,375,661, Cl. 361-91.000.
Saylor, Millard P. Wire connection. 4,375,118, Cl. 24-27.000.
Schering Aktiengesellschaft: *See*—
Schroeder, Eberhard, deceased; and Rufer, Clemens, 4,375,479, Cl. 424-321.000.
Siewert, Gerhard; Boidol, Werner; and Daum, Joachim, 4,375,514, Cl. 435-172.000.
Schering Corporation: *See*—
Waitz, Jay A.; Patel, Mahesh G.; and Horan, Ann C., 4,375,542, Cl. 536-7.100.
Schill, John M. Sawhorse brackets. 4,375,245, Cl. 182-155.000.
Schimel, Keith A. Methods for the treatment of organic material and particularly sewage sludge. 4,375,412, Cl. 210-603.000.
Schindler, Albert I.: *See*—
Koon, Norman C.; and Schindler, Albert I., 4,375,372, Cl. 75-123.00E.
Schinzel, Erich: *See*—
Frischkorn, Hans; and Schinzel, Erich, 4,375,556, Cl. 562-484.000.
Schira, John J.: *See*—
Leung, Chun-Keung; Schira, John J.; and Johnson, Edwin A., 4,375,668, Cl. 364-431.080.
Schlak, Ottfried: *See*—
Idel, Karsten; Cohnen, Wolfgang; Freitag, Dieter; and Schlak, Ottfried, 4,375,525, Cl. 524-108.000.
Schlumberger Technology Corporation: *See*—
Anderson, Ronald A.; and Shapiro, Robert M., 4,375,313, Cl. 350-96.230.
Schmall, Karl-Heinz; and Sendor, Piotr, to PRECITEC Gesellschaft fur Prazisionstechnik und Elektronik mbH & Co. Entwicklungs und Vertriebs-KG. Apparatus for monitoring a boundary line. 4,375,289, Cl. 273-371.000.
Schmid, Walter. Electrode for detecting bioelectrical signals. 4,375,219, Cl. 128-639.000.
Schmidt, Robert W., to Texas Instruments Incorporated. Eight bit standard connector bus for sixteen bit microcomputer using mirrored memory boards. 4,375,665, Cl. 364-200.000.
Schmitt, Bernard: *See*—
Le Minez, Jean-Jacques; and Schmitt, Bernard, 4,375,498, Cl. 428-416.000.
Schneider, Irwin; Collins, William C.; Imber, Oscar; and Klein, Philipp H., to United States of America, Navy. Photodichroic crystals. 4,375,429, Cl. 252-584.000.
Schneider, Rolf: *See*—
Muzumdar, Deepak; Levine, William; Suarez, Gerry; Schneider, Rolf; and Wagner, Theodore W., 4,375,584, Cl. 179-100.00D.
Schneiter, Andres F.; and Fikart, Josef L., to AEL Microtel, Ltd. Circuit for linearizing frequency modulated oscillators on microstrip. 4,375,621, Cl. 332-16.00T.
Scholz, Donald T. Automatic tuning device. 4,375,180, Cl. 84-454.000.
Schopper, Bernd; Lowe, Derek; Reinartz, Hans-Dieter; and Tandler, Peter, to ITT Industries, Inc. Dual-circuit pressure control valves. 4,375,304, Cl. 303-52.000.
Schreihage, Wilhelm: *See*—
Dull, Helmut; and Schreihage, Wilhelm, 4,375,126, Cl. 29-740.000.
Schroeder, Eberhard, deceased (by Shroeder, Kirsten and Christian, executors); and Rufer, Clemens, to Schering Aktiengesellschaft. Indanyl derivatives and use. 4,375,479, Cl. 424-321.000.
Schuermeyer, Fritz L. Dynamic random access memory cell using field effect devices. 4,375,677, Cl. 365-154.000.
Schulze, Herbert C. Drilling alignment tool. 4,375,341, Cl. 408-72.00R.
Schulzke, Peter: *See*—
Sieber, Albrecht; Schulzke, Peter; Gunther, Dieter; and Steinbrenner, Ulrich, 4,375,207, Cl. 123-333.000.
Schwartz, Harold O.; Gong, Ray F.; and Durk, Victor, to Wurlitzer Company, The. Action for electronic piano. 4,375,179, Cl. 84-439.000.
Schweitzer, Edmund O., Jr. Fault indicator with flux concentrating means. 4,375,617, Cl. 324-133.000.
Schwind, Richard J.: *See*—
Wollar, Burnell J.; and Schwind, Richard J., 4,375,342, Cl. 411-41.000.
Scott, Kenneth A.: *See*—
Lyons, James E.; Suld, George; Shinn, Robert W.; and Scott, Kenneth A., 4,375,361, Cl. 44-70.000.
Scott, William P.: *See*—
Swartz, Charles J.; and Scott, William P., 4,375,358, Cl. 44-51.000.
Segawa, Hideo: *See*—
Mori, Kouji; Segawa, Hideo; Sakurai, Kouichi; and Itagaki, Masanori, 4,375,644, Cl. 357-30.000.

Sehgal, Surendra N.; and Vezina, Claude, to Ayerst, McKenna & Harrison, Inc. Ravidomycin and process for preparation. 4,375,463, Cl. 424-122.000.
Sehgal, Surendra N.; and Vezina, Claude, to Ayerst, McKenna & Harrison Inc. Antibiotic AY24,668 and process of preparation. 4,375,464, Cl. 424-122.000.
Seiner, Jerome A.: *See*—
Nowakowski, Peter M.; Boberski, William G.; and Seiner, Jerome A., 4,375,496, Cl. 428-403.000.
Seitz, Adolf; and Buras, John West, to D. Gottlieb & Co. Electronic game apparatus. 4,375,286, Cl. 273-121.00A.
Seligman, Peter F.; and Neumeister, John W., to United States of America, Navy. In-situ rate measuring system. 4,375,451, Cl. 422-281.000.
Selleri, Narciso, to Finike Italiana Marposs, S.p.A. Machine for sorting workpieces belonging to different classification classes. 4,375,256, Cl. 198-360.000.
Selman, Gordon L.: *See*—
Knapton, Arthur G.; and Selman, Gordon L., 4,375,426, Cl. 252-472.000.
Selvi, Fabio: *See*—
Giovanni, Chietti; and Selvi, Fabio, 4,375,267, Cl. 223-112.000.
Seman, George W.: *See*—
Silver, David A.; Dima, Attila F.; and Seman, George W., 4,375,577, Cl. 174-22.00R.
Sendor, Piotr: *See*—
Schmall, Karl-Heinz; and Sendor, Piotr, 4,375,289, Cl. 273-371.000.
Sequeira, Avilino, Jr.: *See*—
Harrison, Charles W.; Pitman, Herbert J.; Sequeira, Avilino, Jr.; and Begnaud, John D., 4,375,403, Cl. 208-33.000.
Sevini, Paolo: *See*—
Bazzani, Fausto; and Sevini, Paolo, 4,375,633, Cl. 340-73.000.
Sewell, Peter C.; and Rundle, Gregory E. High speed cold adhesive curing process and apparatus therefor. 4,375,383, Cl. 156-291.000.
Shacklette, Lawrence W.: *See*—
Miller, Granville G.; Ivory, Dawn M.; Shacklette, Lawrence W.; Chance, Ronald R.; Elsenbaumer, Ronald L.; and Baughman, Ray H., 4,375,427, Cl. 252-512.000.
Shan-Lok Corporation: *See*—
Shanley, Stephen E., Jr., 4,375,174, Cl. 81-165.000.
Shanley, Stephen E., Jr., to Shan-Lok Corporation. Adjustable end wrench releasable locking feature. 4,375,174, Cl. 81-165.000.
Shapiro, Robert M.: *See*—
Anderson, Ronald A.; and Shapiro, Robert M., 4,375,313, Cl. 350-96.230.
Sharp Kabushiki Kaisha: *See*—
Funada, Fumiaki; Nonomura, Keisaku; Uede, Hisashi; and Wada, Tomio, 4,375,317, Cl. 350-335.000.
Wada, Tomio; Uede, Hisashi; Takechi, Sadatoshi; and Yano, Kohzo, 4,375,319, Cl. 350-357.000.
Shaw, David N., to Dunham-Bush, Inc. Closed loop compressed gas system with oil mist lubricated screw compressor. 4,375,156, Cl. 62-468.000.
Sheetz, Floyd R. Emergency kit. 4,375,134, Cl. 40-591.000.
Shell Oil Company: *See*—
Edwards, Charles L., 4,375,564, Cl. 568-618.000.
Hart, Donald W.; and Slaugh, Lynn H., 4,375,571, Cl. 585-431.000.
Kramer, Petrus A., 4,375,557, Cl. 562-500.000.
Muszynski, Larry C., 4,375,489, Cl. 428-36.000.
Park, Lawrence D., Jr.; and Roever, William L., 4,375,679, Cl. 367-13.000.
Slaugh, Lynn H., 4,375,424, Cl. 252-463.000.
Slaugh, Lynn H., 4,375,574, Cl. 585-474.000.
Slaugh, Lynn H., 4,375,575, Cl. 585-480.000.
Shelledy, Frank B.: *See*—
Brock, George W.; Hyland, Robert N.; Pawlowski, Edward J.; and Shelledy, Frank B., 4,375,657, Cl. 360-125.000.
Shensa, Mark J.; Satorius, Edgar H.; and Pack, James D., to United States of America, Navy. Least squares lattice decision feedback equalizer. 4,375,692, Cl. 375-13.000.
Sherif, Fawzy G., to Stauffer Chemical Company. Process for purifying yellow phosphorus. 4,375,457, Cl. 423-322.000.
Shikata, Makoto: *See*—
Ohara, Yoshiaki; and Shikata, Makoto, 4,375,211, Cl. 123-440.000.
Shimazu, Kiyotaka: *See*—
Katagiri, Katsuo; and Shimazu, Kiyotaka, 4,375,450, Cl. 422-170.000.
Shimoyama, Yuji; Yanagishima, Fumiya; Yamamoto, Hiromasa; and Sakamoto, Gunji, to Kawasaki Steel Corp. Method of controlling tensions in continuous annealing furnace and system therefor. 4,375,283, Cl. 266-44.000.
Shinn, Robert W.: *See*—
Lyons, James E.; Suld, George; Shinn, Robert W.; and Scott, Kenneth A., 4,375,361, Cl. 44-70.000.
Shinshu Seiki Kabushiki Kaisha: *See*—
Mitsuishi, Akio, 4,375,338, Cl. 400-124.000.
Shoemaker, George T.: *See*—
Stack, Timothy F.; and Shoemaker, George T., 4,375,636, Cl. 340-347.0SY.
Shroeder, Kirsten and Christian, executors: *See*—
Schroeder, Eberhard, deceased; and Rufer, Clemens, 4,375,479, Cl. 424-321.000.
Shuford, Charles E.; Clark, Faith D.; and Russell, Brenda J., to Procter & Gamble Company, The. Fat composition containing salt, lecithin and hydrophilic silica. 4,375,483, Cl. 426-330.600.
Sidchrome (S.E. Asia) Limited: *See*—
Siddall, Michael, 4,375,449, Cl. 373-33.000.
Siddall, Michael, to Sidchrome (S.E. Asia) Limited. Electric furnaces. 4,375,449, Cl. 373-33.000.
Sieber, Albrecht; Schulzke, Peter; Gunther, Dieter; and Steinbrenner, Ulrich, to Robert Bosch GmbH. Top speed limiter for an internal combustion engine. 4,375,207, Cl. 123-333.000.
Siemens Corporation: *See*—
Muzumdar, Deepak; Levine, William; Suarez, Gerry; Schneider, Rolf; and Wagner, Theodore W., 4,375,584, Cl. 179-100.00D.
Siewert, Gerhard; Boidol, Werner; and Daum, Joachim, to Schering, Aktiengesellschaft. Preparation and use of recombinant plasmids containing genes for alkaline phosphatases. 4,375,514, Cl. 435-172.000.
Sigmund, Jerry A., to SPS Technologies, Inc. Method and apparatus for tightening threaded fastener assemblies. 4,375,120, Cl. 29-407.000.
Sigmund, Jerry A., to SPS Technologies. Dynamic friction indicator and tightening system usable therewith. 4,375,121, Cl. 29-407.000.
Sigmund, Jerry A., to SPS Technologies, Inc. Method and apparatus for tightening threaded fastener assemblies. 4,375,122, Cl. 29-407.000.
Silver, David A.; Dima, Attila F.; and Seman, George W., to Pirelli Cable Corporation. Stop joint assembly for pressurized laminar dielectric cable. 4,375,577, Cl. 174-22.00R.
Singer, Paul A.; and Cernius, Roger K., to United States of America, Navy. Pseudo-atmospheric noise generator with control of temporal characteristics. 4,375,620, Cl. 331-78.000.
Sinniger, Joseph O.; and Robbi, Anthony D., to RCA Corporation. Digital timing system for spark advance. 4,375,209, Cl. 123-416.000.
Sipos, Tibor: *See*—
Gander, Robert J.; Sipos, Tibor; and Buck, Carl J., 4,375,461, Cl. 424-56.000.
Sklavounos, Constantine, to Pfizer Inc. Processes for preparation, isolation and purification of dipeptide sweeteners. 4,375,430, Cl. 260-112.50R.
Slaugh, Lynn H., to Shell Oil Company. Catalyst for the preparation of dimethyl ether. 4,375,424, Cl. 252-463.000.
Slaugh, Lynn H., to Shell Oil Company. Process for transalkylating benzene and dialkylbenzene. 4,375,574, Cl. 585-474.000.
Slaugh, Lynn H., to Shell Oil Company. Dialkylbenzene isomerization process. 4,375,575, Cl. 585-480.000.
Slaugh, Lynn H.: *See*—
Hart, Donald W.; and Slaugh, Lynn H., 4,375,571, Cl. 585-431.000.
Smirmaul, Heinz J. Dual image corneal radius measurement. 4,375,320, Cl. 351-212.000.
Smith, Harry D., Jr.: *See*—
Dodge, Carl; and Smith, Harry D., Jr., 4,375,164, Cl. 73-154.000.
Smith, Henry C. Audio responsive digital toy. 4,375,287, Cl. 273-138.00A.
Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,375,472, Cl. 424-269.000.
Hills, Derek W.; and White, George R., 4,375,435, Cl. 260-245.600.
Smith, Lawrence A., Jr., to Chemical Research & Licensing Co. Enhanced diisobutene production in the presence of methyl tertiary butyl ether. 4,375,576, Cl. 585-510.000.
Societe Anonyme dite: GIPELEC: *See*—
Gabano, Jean-Paul, 4,375,502, Cl. 429-101.000.
Solbes, Francisco. Front suspension and steering system for cycles and motorcycles having two interdependent points of support on the ground. 4,375,293, Cl. 280-21.00A.
Soma, William D. Facial skin activator emulsion and method of skin moisturizing and cleansing. 4,375,480, Cl. 424-358.000.
Somerville, William A.: *See*—
Warner, Paul L., Jr.; Luber, Edward J., Jr.; Somerville, William A.; and Zusi, F. Christopher, 4,375,545, Cl. 546-263.000.
Southwire Company: *See*—
Berry, Milton E.; and Pariani, Ronald L., 4,375,352, Cl. 431-8.000.
SOVAM: *See*—
Morin, Andre M. R., 4,375,244, Cl. 180-14.00C.
Speakman, Edwin L.: *See*—
Kightlinger, Adrian P.; Speakman, Edwin L.; and Van Duzee, Grant T., 4,375,535, Cl. 527-313.000.
Speck, Gordon C. Automotive vehicle bracket. 4,375,268, Cl. 224-42.45R.
Speers, Jerry M.: *See*—
Robinson, Leon H.; Speers, Jerry M.; and Barry, Adelber, 4,375,310, Cl. 339-88.00R.
Sperry Corporation: *See*—
Bernhardt, Richard P.; and Cowan, Everett C., Jr., 4,375,221, Cl. 130-27.00S.
Krebs, Robert H., Jr., 4,375,678, Cl. 365-238.000.
Sperry, Elmer A., III; and Legenhausen, Robert F., to Beckman Instruments, Inc. Decontaminating fluid sensor mechanism. 4,375,170, Cl. 73-863.850.
Sprecher & Schuh AG: *See*—
Zahner, Hansruedi, deceased, 4,375,527, Cl. 524-492.000.
SPS Technologies: *See*—
Sigmund, Jerry A., 4,375,121, Cl. 29-407.000.
SPS Technologies, Inc.: *See*—
Ney, Andrew L., 4,375,123, Cl. 29-407.000.
Sigmund, Jerry A., 4,375,120, Cl. 29-407.000.
Sigmund, Jerry A., 4,375,122, Cl. 29-407.000.
Stack, Timothy F.; and Shoemaker, George T., to United Technologies Corporation. AC Synchro signal to digital signal converter. 4,375,636, Cl. 340-347.0SY.

Staley, Darrell S., to Ampex Corporation. Camera mount. 4,375,653, Cl. 358-229.000.
Standard Brands Incorporated: *See—*
Kightlinger, Adrian P.; Speakman, Edwin L.; and Van Duzee, Grant T., 4,375,535, Cl. 527-313.000.
Standard Oil Company, The: *See—*
Adams, Richard C.; and Herold, Albert J., 4,375,441, Cl. 264-25.000.
Starkey, David T., to Norlin Industries, Inc. Keyboard latch for electronic organ. 4,375,176, Cl. 84-1.010.
Stauffer Chemical Company: *See—*
Sherif, Fawzy G., 4,375,457, Cl. 423-322.000.
Wei, Chung H.; and Kuhn, Leroy B., 4,375,541, Cl. 528-500.000.
Steelcase Inc.: *See—*
Pergler, Charles C.; and Knoblauch, Jack R., 4,375,301, Cl. 297-313.000.
Steidinger, Donald J., to Wallace Computer Services, Inc. Method of making a continuous web form and product, particularly one suitable for airline ticketing. 4,375,382, Cl. 156-265.000.
Stein, Herman H.: *See—*
Horron, Bruce W.; and Stein, Herman H., 4,375,478, Cl. 424-319.000.
Steinbrenner, Ulrich: *See—*
Sieber, Albrecht; Schulzke, Peter; Gunther, Dieter; and Steinbrenner, Ulrich, 4,375,207, Cl. 123-333.000.
Steiner, William G., to Lockheed Corporation. Voltage regulator for direct current power supply. 4,375,614, Cl. 323-280.000.
Sterling Drug Inc.: *See—*
Lesher, George Y.; and Gruett, Monte D., 4,375,467, Cl. 424-263.000.
Stevens, Myron T., to Outboard Marine Corporation. Arrangement for supplying air, fuel, power and control cables to a marine propulsion unit. 4,375,356, Cl. 440-112.000.
Stevenson, James F., to Emhart Industries, Inc. Method and apparatus for automatic adjustment of cooling wind in a forehearth. 4,375,368, Cl. 65-29.000.
Steward Plastics, Inc.: *See—*
Carlson, Lennart L.; and Hoiberg, Douglas I., 4,375,381, Cl. 156-195.000.
Stoffel, John F., to Stoffel Seals Corporation. Cinch type seal. 4,375,298, Cl. 292-307.00R.
Stoffel Seals Corporation: *See—*
Stoffel, John F., 4,375,298, Cl. 292-307.00R.
Stokes, Richard M., to Imperial Chemical Industries PLC. Polyester film composites. 4,375,494, Cl. 428-323.000.
Strahilevitz, Meir. Immunological methods for removing species from the blood circulatory system and devices therefor. 4,375,414, Cl. 210-638.000.
Sturm, Werner. Thermoplastic welding sleeve. 4,375,591, Cl. 219-544.000.
Suarez, Gerry: *See—*
Muzumdar, Deepak; Levine, William; Suarez, Gerry; Schneider, Rolf; and Wagner, Theodore W., 4,375,584, Cl. 179-100.00D.
Subtex, Inc.: *See—*
George, Stephen; and George, Thomas H., 4,375,493, Cl. 428-246.000.
Succu, Francesca: *See—*
Torresin, Giuseppe, 4,375,169, Cl. 73-861.530.
Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Braun, Joerg P.; and Fritz, Stefan, 4,375,161, Cl. 72-412.000.
Sugiyama, Matsuyoshi: *See—*
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,375,277, Cl. 239-703.000.
Suld, George: *See—*
Lyons, James E.; Suld, George; Shinn, Robert W.; and Scott, Kenneth A., 4,375,361, Cl. 44-70.000.
Sullivan, Donald P., to Universal Mobility, Inc. Monorail guideway assembly. 4,375,193, Cl. 104-118.000.
Sullivan, Thomas P.: *See—*
Lee, Charleston R.; Russo, Joseph J.; Jeter, Shirley A.; and Sullivan, Thomas P., 4,375,484, Cl. 426-549.000.
Sumida, Sizuo: *See—*
Nagaoka, Mituru; and Sumida, Sizuo, 4,375,610, Cl. 318-444.000.
Sumimoto Electric Industries, Ltd.: *See—*
Kato, Chiaki, 4,375,201, Cl. 118-60.000.
Sumitomo Electric Industries, Ltd.: *See—*
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,375,632, Cl. 338-214.000.
Sumitomo Metal Industries, Limited: *See—*
Ohtani, Hiroo; and Watanabe, Seiichi, 4,375,377, Cl. 148-12.00F.
Sung, Rodney L.: *See—*
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., 4,375,417, Cl. 252-33.400.
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., 4,375,418, Cl. 252-33.400.
Suntech, Inc.: *See—*
Lyons, James E.; Suld, George; Shinn, Robert W.; and Scott, Kenneth A., 4,375,361, Cl. 44-70.000.
Sutton, John H., III, to Beckman Instruments, Inc. Fixed angle tube carrier. 4,375,272, Cl. 494-16.000.
Suzuki, Ryoichi; Tokuda, Ryuji; and Hirohata, Michio, to Canon Kabushiki Kaisha. Exposure amount control device. 4,375,321, Cl. 354-23.00D.
Suzuki, Toshikazu: *See—*
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,375,277, Cl. 239-703.000.
Svitak, John J.: *See—*
Di Leo, Daniel A.; Kurtz, Samuel E.; and Svitak, John J., 4,375,606, Cl. 313-499.000.
Swank, Robert K.: *See—*
Cusano, Dominic A.; Swank, Robert K.; and White, Philip J., 4,375,423, Cl. 252-301.360.
Swanson, Sally A.: *See—*
Wingard, Robert E., Jr.; Ng, Steve Y. W.; and Swanson, Sally A., 4,375,357, Cl. 8-647.000.
Swartz, Charles J.; and Scott, William P., to Conoco Inc. Fuel slurries of solid carbonaceous material in water. 4,375,358, Cl. 44-51.000.
Swenson, Richard M.; and Franck, Jerome B., to United States of America, Navy. Apparatus for low g-level vibrational pulse detection. 4,375,168, Cl. 73-658.000.
Swenson, Richard M.: *See—*
Yates, Patrick A.; Swenson, Richard M.; and Hennings, George N., 4,375,192, Cl. 102-215.000.
Syntex (U.S.A.) Inc.: *See—*
Walker, Keith A. M., 4,375,474, Cl. 424-273.00R.
Tabata, Norikazu; Yagi, Shigenori; Ueno, Takaaori, and Ogawa, Shuji, to Mitsubishi Denki Kabushiki Kaisha. Multi-phase silent discharge gas laser apparatus. 4,375,690, Cl. 372-82.000.
Taguchi, Noboru, to Nippon Electric Co., Ltd. Gas laser tube. 4,375,688, Cl. 372-65.000.
Taiho Kogyo Co., Ltd.: *See—*
Nara, Tamotsu; and Kamiya, Soji, 4,375,499, Cl. 428-653.000.
Nara, Tamotsu; and Kamiya, Soji, 4,375,500, Cl. 428-653.000.
Takamori, Osamu: *See—*
Hara, Hisanori; Kawamura, Takafumi; Takamori, Osamu; and Ieko, Wako, 4,375,388, Cl. 202-239.000.
Takasugi, Tsuneji: *See—*
Kushida, Hachiro; Takasugi, Tsuneji; and Irie, Kenji, 4,375,391, Cl. 204-35.00N.
Takechi, Sadatoshi: *See—*
Wada, Tomio; Uede, Hisashi; Takechi, Sadatoshi; and Yano, Kohzo, 4,375,319, Cl. 350-357.000.
Talley, Charles P.: *See—*
Katz, Michael M.; Hashem, Mohamed M.; and Talley, Charles P., 4,375,437, Cl. 260-990.000.
Tamamori, Hideo, to Nippon Air Brake Co., Ltd. Change-over valve device utilizing the lower pressure of a double input pressure system for increasing the degree of delivered operating pressure. 4,375,303, Cl. 303-40.000.
Tandler, Peter: *See—*
Schopper, Bernd; Lowe, Derek; Reinartz, Hans-Dieter; and Tandler, Peter, 4,375,304, Cl. 303-52.000.
Tangonan, Gregory L., to Hughes Aircraft Company. Graded index waveguide structure and process for forming same. 4,375,312, Cl. 350-96.120.
Tappan Company, The: *See—*
Perl, Richard L., 4,375,587, Cl. 219-10.55B.
Tashma, Zev: *See—*
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,375,472, Cl. 424-269.000.
Tate, Stanley H.; Roberts, Donald K.; Hollingsworth, Carl E.; and Nute, William R., to Tektronix, Inc. Ground isolation monitoring apparatus having a protective circuit. 4,375,660, Cl. 361-50.000.
Taylor, Lyle H.; and Kasner, William H., to Westinghouse Electric Corp. Operation of a two-photon three level laser. 4,375,689, Cl. 372-70.000.
Tazoe, Masaaki: *See—*
Fujiwara, Akiko; Hoshino, Tatsuo; and Tazoe, Masaaki, 4,375,511, Cl. 435-78.000.
Tekni-Plex, Inc.: *See—*
Hrenyo, John, 4,375,262, Cl. 206-418.000.
Tektronix, Inc.: *See—*
Leow, Chon H.; and Nagai, Toshihisa, 4,375,635, Cl. 340-146.30Q.
Tate, Stanley H.; Roberts, Donald K.; Hollingsworth, Carl E.; and Nute, William R., 4,375,660, Cl. 361-50.000.
Telefonaktiebolaget L M Ericsson: *See—*
Josefsson, Lars G.; Oderland, Karl-Erik I.; and Winnberg, Jan-Olov, 4,375,641, Cl. 343-17.20R.
Teller, Aaron J.; Roy, Denis R. J.; and Lin, Shih K., to Teller Environmental Systems, Inc. Method and apparatus for cooling and neutralizing acid gases. 4,375,455, Cl. 423-210.000.
Teller Environmental Systems, Inc.: *See—*
Teller, Aaron J.; Roy, Denis R. J.; and Lin, Shih K., 4,375,455, Cl. 423-210.000.
Teltec, Inc.: *See—*
Luetzow, Edwin J., 4,375,379, Cl. 156-52.000.
Templin, Frank C.; and Zato, Thomas J., to Zenith Radio Corporation. Selective video reception control system. 4,375,651, Cl. 358-191.100.
Tenney, Albert S., III: *See—*
Clark, Alexander H.; O'Neil, John E.; and Tenney, Albert S., III, 4,375,333, Cl. 356-47.000.
Teramachi, Hiroshi. Circulating type ball spline bearing. 4,375,305, Cl. 308-6.00C.
Texaco Inc.: *See—*
Duranleau, Roger G.; and Gates, Walter C., Jr., 4,375,425, Cl. 252-467.000.
Harrison, Charles W.; Pitman, Herbert J.; Sequeira, Avilino, Jr.; and Begnaud, John D., 4,375,403, Cl. 208-33.000.
McEntire, Edward E.; and Nieh, Edward C. Y., 4,375,558, Cl. 564-206.000.
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., 4,375,417, Cl. 252-33.400.

Zoleski, Benjamin H.; Sung, Rodney L.; and Callen, William P., 4,375,418, Cl. 252-33.400.
Texas Instruments Incorporated: *See*—
Schmidt, Robert W., 4,375,665, Cl. 364-200.000.
Textilausrustungs-Gesellschaft Schroers & Co.: *See*—
Eichmanns, Herbert; Meyer, Wilhelm; and Kemper, Winfried, 4,375,158, Cl. 68-205.00R.
Textron Inc.: *See*—
DeCaro, Charles J., 4,375,119, Cl. 29-240.000.
Thoma, Frank; and Oblander, Kurt, to Daimler-Benz Aktiengesellschaft. Choke pin aozzle. 4,375,274, Cl. 239-117.000.
Thompson, Charles C., to United Technologies Corporation. Splat cooling of liquid metal droplets. 4,375,440, Cl. 264-12.000.
Thomson-CSF: *See*—
Lacombat, Michel; and Dubroeucq, Georges, 4,375,315, Cl. 350-96.250.
Thornton, William E., to United States of America, National Aeronautics and Space Administration. Kinesimetric method and apparatus. 4,375,674, Cl. 364-559.000.
Tiemann, Jerome J., to General Electric Company. System for processing video signals. 4,375,650, Cl. 358-133.000.
Tietje, Helmut G., to TM Industries, Inc. Grease lubricating assembly. 4,375,246, Cl. 184-45.00R.
Timex Corporation: *See*—
Mancini, William; Weiss, Carl; and Grohoski, Theodore, 4,375,259, Cl. 206-223.000.
Tischler, Manfred: *See*—
Kralowetz, Johanna; and Tischler, Manfred, 4,375,670, Cl. 364-474.000.
TM Industries, Inc.: *See*—
Tietje, Helmut G., 4,375,246, Cl. 184-45.00R.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,375,446, Cl. 264-518.000.
Tobias, Charles W.: *See*—
Foller, Peter C.; Goodwin, Mark L.; and Tobias, Charles W., 4,375,395, Cl. 204-129.000.
Tohyama, Yoshikuni; and Katsura, Akihiko, to Canon Kabushiki Kaisha. Slit exposure device with white reflecting member. 4,375,331, Cl. 355-51.000.
Tokico, Ltd.: *See*—
Aono, Masami; and Izumi, Shinichi, 4,375,252, Cl. 188-79.50P.
Toko, Inc.: *See*—
Sakai, Koichi, 4,375,598, Cl. 307-360.000.
Tokuda, Ryuji: *See*—
Suzuki, Ryoichi; Tokuda, Ryuji; and Hirohata, Michio, 4,375,321, Cl. 354-23.00D.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hatanaka, Masayuki; Kurita, Atsushi; Yokoyama, Yoshikane; and Kusakabe, Masahiro, 4,375,523, Cl. 523-212.000.
Toriumi, Yasuo: *See*—
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,375,632, Cl. 338-214.000.
Toro Gamyo Kogyo Co., Ltd.: *See*—
Abe, Nobuyoshi; Kanemaru, Kiyoshi; and Yokoyama, Minoru, 4,375,373, Cl. 106-308.00B.
Torresin, Giuseppe, to Succu, Francesca. Turbulence conveyor flow meter. 4,375,169, Cl. 73-861.530.
Toshiba Silicone Co., Ltd.: *See*—
Hatanaka, Masayuki; Kurita, Atsushi; Yokoyama, Yoshikane; and Kusakabe, Masahiro, 4,375,523, Cl. 523-212.000.
Toyo Kogyo Co., Ltd.: *See*—
Nagaoka, Mitaru; and Sumida, Sizuo, 4,375,610, Cl. 318-444.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,375,277, Cl. 239-703.000.
Tradowsky, Michael. Slide filing and retrieval system. 4,375,132, Cl. 40-361.000.
Trieselt, Wolfgang: *See*—
Greif, Norbert; Klahr, Erhard; and Trieselt, Wolfgang, 4,375,565, Cl. 568-622.000.
Trotter, Jimmy R.: *See*—
Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., 4,375,540, Cl. 528-302.000.
Tsai, Yih W., to PPG Industries, Inc. Regenerator flow distribution by means of a burner. 4,375,235, Cl. 165-1.000.
Tsai, Yih W., to PPG Industries, Inc. Regenerator flow distribution by means of air jets. 4,375,236, Cl. 165-1.000.
Tsuboi, Nobuyuki. Carrying device with sliders and rail. 4,375,195, Cl. 104-246.000.
Tsuchikura, Katsuhiko, to Aiwa Co., Ltd. Soldering method for electric and or electronic component. 4,375,271, Cl. 228-180.00R.
Tsuchiya, Hiroaki; and Kurosaki, Yasuhide, to Canon Kabushiki Kaisha. Electrophotographic device with light quantity control. 4,375,328, Cl. 355-14.00E.
Tsuda, Takeshi: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Onofusa, Mitsuo; Kudoh, Akihide; Kotani, Makoto; and Tsuda, Takeshi, 4,375,566, Cl. 568-716.000.
Tsuji, Toshio: *See*—
Kato, Takayuki; Tsuji, Toshio; and Konishi, Kiyokazu, 4,375,672, Cl. 364-551.000.
Tufco Corporation: *See*—
Beasley, Max M., 4,375,196, Cl. 112-79.00R.
Tylo Sauna S.A. Corporation: *See*—
Janson, Mats O., 4,375,590, Cl. 219-364.000.
UBE Industries Ltd.: *See*—
Fukui, Kiyoshi; and Okimoto, Kiyomi, 4,375,554, Cl. 562-440.000.
Udd, Eric: *See*—
Cahill, Richard F.; and Udd, Eric, 4,375,680, Cl. 367-149.000.
Ueda, Shigeki, to Matsushita Electric Industrial Company, Limited. Cooking assistance device and a combination thereof with a microwave oven. 4,375,586, Cl. 219-10.55B.
Uede, Hisashi: *See*—
Funada, Fumiaki; Nonomura, Keisaku; Uede, Hisashi; and Wada, Tomio, 4,375,317, Cl. 350-335.000.
Wada, Tomio; Uede, Hisashi; Takechi, Sadatoshi; and Yano, Kohzo, 4,375,319, Cl. 350-357.000.
Uehara, Tsutomu. Apparatus for forming a bar positioning member. 4,375,230, Cl. 140-102.000.
Ueno, Takanori: *See*—
Tabata, Norikazu; Yagi, Shigenori; Ueno, Takanori; and Ogawa, Shuji, 4,375,690, Cl. 372-82.000.
Ulmer, Richard W.; and Whatley, Roger A., to Motorola, Inc. Switched capacitor temperature independent bandgap reference. 4,375,595, Cl. 307-297.000.
Ulmschneider, Dieter: *See*—
Wegener, Peter; Riemenschneider, Wilhelm; and Ulmschneider, Dieter, 4,375,436, Cl. 260-545.00R.
UMC Industries, Inc.: *See*—
Gilliom, John W., 4,375,184, Cl. 99-422.000.
Union Camp Corporation: *See*—
Kitchell, Thorne C., 4,375,261, Cl. 206-320.000.
Union Carbide Corporation: *See*—
Fuderer, Andrija, 4,375,363, Cl. 55-25.000.
Izod, Thomas P. J.; and Duisman, Jack A., 4,375,568, Cl. 568-758.000.
Union Industrielle et D'Entreprise: *See*—
Gallon, Jean, 4,375,241, Cl. 173-151.000.
United States of America
Air Force: *See*—
Kosonocky, Walter F., 4,375,597, Cl. 307-311.000.
Army: *See*—
Ewanizky, Theodore F., Jr., 4,375,594, Cl. 307-110.000.
Hook, Dale L.; Waypa, John; and Jacobs, Theodore A., 4,375,687, Cl. 372-58.000.
Vig, John R., 4,375,604, Cl. 310-312.000.
Energy: *See*—
Davis, Jefferson W., Jr., 4,375,555, Cl. 562-444.000.
National Aeronautics and Space Administration; acting administrator; with respect to an invention of:
Hergenrother, Paul M., to United States of America, National Aeronautics and Space Administration. Polyphenylquinoxalines containing pendant phenylethynyl and ethynyl groups. 4,375,536, Cl. 528-125.000.
National Aeronautics and Space Administration: *See*—
Beggs, James M.; Green, Gordon; and Mattauch, Robert J., 4,375,396, Cl. 204-129.550.
Nichols, George H., 4,375,281, Cl. 244-121.000.
Thornton, William E., 4,375,674, Cl. 364-559.000.
United States of America, National Aeronautics and Space Administration; and Hergenrother, Paul M., 4,375,536, Cl. 528-125.000.
National Security Agency: *See*—
Hudak, John J., 4,375,626, Cl. 334-79.000.
Navy: *See*—
Braun, John D., 4,375,522, Cl. 523-180.000.
Gerber, Hermann E., 4,375,334, Cl. 356-336.000.
Koon, Norman C.; and Schindler, Albert I., 4,375,372, Cl. 75-123.00E.
Schneider, Irwin; Collins, William C.; Imber, Oscar; and Klein, Philipp H., 4,375,429, Cl. 252-584.000.
Seligman, Peter F.; and Neumeister, John W., 4,375,451, Cl. 422-281.000.
Shensa, Mark J.; Satorius, Edgar H.; and Pack, James D., 4,375,692, Cl. 375-13.000.
Singer, Paul A.; and Cernius, Roger K., 4,375,620, Cl. 331-78.000.
Swenson, Richard M.; and Franck, Jerome B., 4,375,168, Cl. 73-658.000.
Yates, Patrick A.; Swenson, Richard M.; and Hennings, George N., 4,375,192, Cl. 102-215.000.
U.S. Philips Corporation: *See*—
Auphan, Michael J., 4,375,166, Cl. 73-628.000.
Bruning, Hugo A. C. M.; van Vuchi, Johannes H. N.; Westendorp, Frans F.; and Zijlstra, Hinne, 4,375,257, Cl. 206-0.700.
Byatt, Stephen W., 4,375,125, Cl. 29-588.000.
de Waard, Peter J., 4,375,686, Cl. 372-45.000.
Dull, Helmut; and Schreihage, Wilhelm, 4,375,126, Cl. 29-740.000.
Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Immink, Kornelis A.; Dijkmans, Eise C.; and Geelen, Mathias H., 4,375,623, Cl. 333-138.000.
Harding, Geoffrey; and Wagner, Wolfgang, 4,375,695, Cl. 378-006.000.
United Technologies Corporation: *See*—
Giamei, Anthony F.; and Doiron, Robert E., 4,375,375, Cl. 148-11.50F.
Herold, Robert A., 4,375,282, Cl. 249-175.000.
Stack, Timothy F.; and Shoemaker, George T., 4,375,636, Cl. 340-347.05Y.
Thompson, Charles C., 4,375,440, Cl. 264-12.000.

United Wire Group p.l.c.: *See*—
Graeme-Barber, Christopher; and Painter, Donald S., 4,375,199, Cl. 114-222.000.

Universal Mobility, Inc.: *See*—
Sullivan, Donald P., 4,375,193, Cl. 104-118.000.

University of California, The Regents of the: *See*—
Masolagas, Stavros C., 4,375,459, Cl. 435-2.000.

University of Michigan, The Regents of the: *See*—
Gooding, Elwyn R., 4,375,108, Cl. 2-413.000.

UOP Inc.: *See*—
Anderson, Thomas A., 4,375,408, Cl. 209-405.000.
Long, William A.; Fischer, Ward E.; and Brunelle, Rene J., 4,375,300, Cl. 297-232.000.

Upjohn Company, The: *See*—
Rudzik, Allan D., 4,375,473, Cl. 424-269.000.

Ura, Hiroaki: *See*—
Matsumoto, Kenichi; Ura, Hiroaki; Ogino, Tamio; and Koiso, Junichi, 4,375,327, Cl. 355-3.0FU.

USM Corporation: *See*—
Carlson, John H., 4,375,602, Cl. 310-83.000.

Vallourec: *See*—
Verdickt, Jacques, 4,375,160, Cl. 72-208.000.

Valmet Oy: *See*—
Leiviska, Veikko, 4,375,188, Cl. 100-162.00R.

Van Blarcom, David: *See*—
Rubin, Fred K.; and Van Blarcom, David, 4,375,421, Cl. 252-110.000.

Vandervoort, John R.: *See*—
Richards, Elmer A.; Vandervoort, John R.; and Bogema, Edward J., 4,375,172, Cl. 74-339.000.

van de Wetering, Gerrit; and Isler, Jack J. One piece molded pallet-container. 4,375,265, Cl. 220-1.500.

Vandiver, Mary L.: *See*—
Bertani, Gilbert A.; and Vandiver, Mary L., 4,375,200, Cl. 116-8.000.

Van Duzee, Grant T.: *See*—
Kightlinger, Adrian P.; Speakman, Edwin L.; and Van Duzee, Grant T., 4,375,535, Cl. 527-313.000.

van Gennip, Adrianus H. M., to DMV-Campina B.V. Process for preparing whipping cream and whipping cream products. 4,375,485, Cl. 426-570.000.

Van Hoesen, Harold E.; and Jakoplic, Richard, to Research-Cottrell, Inc. Rigid discharge electrode for electrical precipitators. 4,375,364, Cl. 55-152.000.

Van Sloun, Peter H.: *See*—
Jensen, Norman E.; and Van Sloun, Peter H., 4,375,504, Cl. 429-115.000.

Van Vliet, James G., to Beckman Instruments, Inc. Signal stability recognition. 4,375,601, Cl. 307-592.000.

van Vucht, Johannes H. N.: *See*—
Bruning, Hugo A. C. M.; van Vucht, Johannes H. N.; Westendorp, Frans F.; and Zijlstra, Hinne, 4,375,257, Cl. 206-0.700.

Varian Associates, Inc.: *See*—
Berkowitz, Edward H., 4,375,676, Cl. 364-900.000.
Yang, Frank J., 4,375,163, Cl. 73-61.10C.

Varner, Jerry R.: *See*—
Mir, Jose M.; Varner, Jerry R.; and Kurtz, Clark N., 4,375,649, Cl. 358-75.000.

Vatne, Kaare B.: *See*—
Mosse, Richard W. E.; and Vatne, Kaare B., 4,375,145, Cl. 53-425.000.

Veeder Industries Inc.: *See*—
Wilkinson, Richard P., 4,375,308, Cl. 339-17.00C.

Verbatim Corporation: *See*—
Martinelli, Lawrence G., 4,375,658, Cl. 360-128.000.

Verdickt, Jacques, to Vallourec. Manufacture of seamless steel tube. 4,375,160, Cl. 72-208.000.

Verex Laboratories, Inc.: *See*—
Dunn, James M., 4,375,468, Cl. 424-230.000.

Vezina, Claude: *See*—
Sehgal, Surendra N.; and Vezina, Claude, 4,375,463, Cl. 424-122.000.
Sehgal, Surendra N.; and Vezina, Claude, 4,375,464, Cl. 424-122.000.

Victor Company of Japan, Limited: *See*—
Okabe, Yukio; and Watanabe, Yasuaki, 4,375,646, Cl. 358-21.00V.

Vig, John R., to United States of America, Army. Method of angle correcting doubly rotated crystal resonators. 4,375,604, Cl. 310-312.000.

Visher, Paul S., to Hughes Aircraft Company. Satellite arrangement providing effective use of the geostationary orbit. 4,375,697, Cl. 455-13.000.

Vivian, J. Edward: *See*—
deFilippi, Richard P.; and Vivian, J. Edward, 4,375,387, Cl. 202-169.000.

Volin, Frank. Detachable backrest for wheelchair. 4,375,295, Cl. 280-289.0WC.

Vrbanek, Branko. Apparatus for shaping dough. 4,375,349, Cl. 425-324.100.

Vulcan Equipment Company, Ltd.: *See*—
Bubik, Leslie; and D'Souza, Stanley, 4,375,231, Cl. 152-370.000.

Wada, Tomio; Uede, Hisashi; Takechi, Sadatoshi; and Yano, Kohzo, to Sharp Kabushiki Kaisha. Electrochromic display device. 4,375,319, Cl. 350-357.000.

Wada, Tomio: *See*—
Funada, Fumiaki; Nonomura, Keisaku; Uede, Hisashi; and Wada, Tomio, 4,375,317, Cl. 350-335.000.

Wagner, Theodore W.: *See*—
Muzumdar, Deepak; Levine, William; Suarez, Gerry; Schneider, Rolf; and Wagner, Theodore W., 4,375,584, Cl. 179-100.00D.

Wagner, Wolfgang. Method of determining the body contour for the reconstruction of the absorption of radiation in a flat zone of a body. 4,375,696, Cl. 378-20.000.

Wagner, Wolfgang: *See*—
Harding, Geoffrey; and Wagner, Wolfgang, 4,375,695, Cl. 378-006.000.

Wahl, Edward F., III. Process and apparatus for control of two-phase flow to geothermal power plants. 4,375,153, Cl. 60-641.200.

Waitz, Jay A.; Patel, Mahesh G.; and Horan, Ann C., to Schering Corporation. Kijanimicin antibiotics and derivatives thereof. 4,375,542, Cl. 536-7.100.

Walker, Donald A.: *See*—
Dyer, Stanley; Molloy, James J.; and Walker, Donald A., 4,375,339, Cl. 400-249.000.

Walker, Jerry L.: *See*—
Zapanovich, John D.; Myers, John G.; and Walker, Jerry L., 4,375,526, Cl. 524-436.000.

Walker, Keith A. M., to Syntex (U.S.A.) Inc. Dioxalane containing imidazole compounds, compositions and use. 4,375,474, Cl. 424-273.00R.

Wallace Computer Services, Inc.: *See*—
Steidinger, Donald J., 4,375,382, Cl. 156-265.000.

Walsh, Peter: *See*—
Fontana, Raymond P.; and Walsh, Peter, 4,375,605, Cl. 313-112.000.

Wang, Pen-Chung; and Renga, James M., to Dow Chemical Company, The. Preparation of trichloromethyl carbinols. 4,375,548, Cl. 556-470.000.

Warner, Paul L., Jr.; Luber, Edward J., Jr.; Somerville, William A.; and Zusi, F. Christopher, to Westwood Pharmaceuticals, Inc. Process for the synthesis of the nicotinyl ester of 6-aminonicotinic acid. 4,375,545, Cl. 546-263.000.

Washecheck, Paul H.; Liu, Andrew T. C.; and Kennedy, E. Flynt, to Conoco Inc. Methanol fuel and methanol fuel additives. 4,375,360, Cl. 44-53.000.

Watanabe, Masakazu; Okuno, Akiyasu; Fukuura, Isamu; and Matsuo, Yasushi, to NGK Spark Plug Co., Ltd. Sintered cubic boron nitride and process for producing the same. 4,375,517, Cl. 501-87.000.

Watanabe, Seiichi: *See*—
Ohtani, Hiroo; and Watanabe, Seiichi, 4,375,377, Cl. 148-12.00F.

Watanabe, Yasuaki: *See*—
Okabe, Yukio; and Watanabe, Yasuaki, 4,375,646, Cl. 358-21.00V.

Waypa, John: *See*—
Hook, Dale L.; Waypa, John; and Jacobs, Theodore A., 4,375,687, Cl. 372-58.000.

Weeks, Robert E.: *See*—
Debono, Manuel; Merkel, Kurt E.; Weeks, Robert E.; and Cole, Herald J., 4,375,513, Cl. 435-169.000.

Wegener, Peter; Riemenschneider, Wilhelm; and Ulmschneider, Dieter, to Hoechst Aktiengesellschaft. Continuous process for the production of chloroalkyl-sulfonyl isocyanates. 4,375,436, Cl. 260-545.00R.

Wegscheider, Gustav. Hydraulic device especially a hydropneumatic accumulator. 4,375,227, Cl. 138-31.000.

Wei, Chung H.; and Kuhn, Leroy B., to Stauffer Chemical Company. Method for separating vinyl chloride from polymers. 4,375,541, Cl. 528-500.000.

Weiss, Carl: *See*—
Mancini, William; Weiss, Carl; and Grohoski, Theodore, 4,375,259, Cl. 206-223.000.

Weissberger, Edward: *See*—
Abel, Edward P.; and Weissberger, Edward, 4,375,506, Cl. 430-215.000.

Weissert, Helmut: *See*—
Hegemann, Karl-Rudolf; Weissert, Helmut; and Brinkmann, Albert, 4,375,439, Cl. 261-62.000.

Wells, David L.: *See*—
Davida, George I.; Wells, David L.; and Kam, John B., 4,375,579, Cl. 178-22.100.

Wells Electronics, Inc.: *See*—
Griffin, Wendell L., 4,375,309, Cl. 339-75.00M.

Wensley, John H., to August Systems. Fault tolerant computational system and voter circuit. 4,375,683, Cl. 371-36.000.

Westendorp, Frans F.: *See*—
Bruning, Hugo A. C. M.; van Vucht, Johannes H. N.; Westendorp, Frans F.; and Zijlstra, Hinne, 4,375,257, Cl. 206-0.700.

Western Electric Co.: *See*—
Di Leo, Daniel A.; Kurtz, Samuel E.; and Svitak, John J., 4,375,606, Cl. 313-499.000.

Westinghouse Electric Corp.: *See*—
Hansen, Irvin L.; and Haack, Randall W., 4,375,627, Cl. 336-5.000.
Morton, Edward W.; Dooley, Thomas E.; and O'Mullan, Daniel W., 4,375,607, Cl. 315-56.000.
Taylor, Lyle H.; and Kasner, William H., 4,375,689, Cl. 372-70.000.
Zucchi, Alfred A.; Altoz, Frank E.; and Hughes, John W., 4,375,290, Cl. 277-12.000.

Westwood Pharmaceuticals, Inc.: *See*—
Warner, Paul L., Jr.; Luber, Edward J., Jr.; Somerville, William A.; and Zusi, F. Christopher, 4,375,545, Cl. 546-263.000.

Whatley, Roger A.: *See*—
Ulmer, Richard W.; and Whatley, Roger A., 4,375,595, Cl. 307-297.000.
Whirlpool Corporation: *See*—
Lyman, John B., 4,375,117, Cl. 15-377.000.
White, George R.: *See*—
Hills, Derek W.; and White, George R., 4,375,435, Cl. 260-245.600.
White, James M., to International Business Machines Corporation. High-speed time delay and integration solid state scanner. 4,375,652, Cl. 358-213.000.
White, Philip J.: *See*—
Cusano, Dominic A.; Swank, Robert K.; and White, Philip J., 4,375,423, Cl. 252-301.360.
Whitefield, John T., to Allen Organ Company. Dynamic frequency modulation controller for an electronic musical instrument. 4,375,178, Cl. 84-1.250.
Whitmore, Keith E., to Eastman Kodak Company. Imaging with non-planar support multicolor filter elements. 4,375,507, Cl. 430-236.000.
Widdowson, Richard E., to General Motors Corporation. Two-stage flow restrictor valve assembly. 4,375,228, Cl. 138-46.000.
Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Process for the conversion of terpenes. 4,375,572, Cl. 585-435.000.
Wieser, Josef; and Krieger, Josef, to Chemie Linz Aktiengesellschaft. N-[3-(1'-3"-Oxapentamethylene-amino-ethylideneamino)-2,4,6-triiodobenzoyl]-β-amino-α- methylpropionitrile in process to make corresponding acid. 4,375,543, Cl. 544-165.000.
Wigger, Lawrence H. Apparatus and method for signaling unsafe handling and optimum firing of a shoulder weapon. 4,375,135, Cl. 42-1.00A.
Wiles, Robert A.: *See*—
Nalewajek, David; Recla, Eugene B.; Wiles, Robert A.; and Eibeck, Richard E., 4,375,453, Cl. 423-21.100.
Wilkinson, Richard P., to Veeder Industries Inc. Plug-in counter module. 4,375,308, Cl. 339-17.00C.
Willard, Alvin K.; Novello, Frederick C.; Hoffman, William F.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. Substituted pyranone inhibitors of cholesterol synthesis. 4,375,475, Cl. 424-279.000.
Williams, Earl P.: *See*—
Lorenz, Donald H.; and Williams, Earl P., 4,375,398, Cl. 204-159.150.
Windham, Donald M., to Badger Company, Inc., The. Cyclonic entrainment separator for evaporator. 4,375,386, Cl. 159-31.000.
Wingard, Robert E., Jr.; Ng, Steve Y. W.; and Swanson, Sally A., to Dynapol. Water-soluble fast polymeric black colorant, its preparation and use in dyes and inks. 4,375,357, Cl. 8-647.000.
Winnberg, Jan-Olov: *See*—
Josefsson, Lars G.; Oderland, Karl-Erik I.; and Winnberg, Jan-Olov, 4,375,641, Cl. 343-17.20R.
Winterbotham, Harold. Switching apparatus for load matching of wind-driven electrical generators. 4,375,593, Cl. 307-37.000.
Wintermeyer, Willi: *See*—
Reiff, Fritz; Wintermeyer, Willi; Wittmann, Rolf; Butzke, Jurgen; and Muller, Peter, 4,375,393, Cl. 204-79.000.
Wirth, William F., to Borg-Warner Corporation. Controlled regenerative d-c power supply. 4,375,612, Cl. 318-767.000.
Wisconsin Alumni Research Foundation: *See*—
Davida, George I.; Wells, David L.; and Kam, John B., 4,375,579, Cl. 178-22.100.
Wittmann, Rolf: *See*—
Reiff, Fritz; Wintermeyer, Willi; Wittmann, Rolf; Butzke, Jurgen; and Muller, Peter, 4,375,393, Cl. 204-79.000.
Wolde-Michael, Girma, to Donaldson Company, Inc. Device for limiting vortex flow. 4,375,411, Cl. 210-512.100.
Wolf, Robert F., to Abex Corporation. Analog/digital drive speed control circuit. 4,375,609, Cl. 318-312.000.
Wolff, Natalie A.: *See*—
Crayne, Jerry W.; Wolff, Natalie A.; and Botterman, David L., 4,375,258, Cl. 206-141.000.
Wollar, Burnell J.; and Schwind, Richard J., to Phillips Plastic Corp. Two-piece plastic fastener. 4,375,342, Cl. 411-41.000.
Wood, Merrill, Jr.: *See*—
Henry, Francis W., Jr.; and Wood, Merrill, Jr., 4,375,518, Cl. 501-99.000.
Wright, Bruce W.: *See*—
Anderson, Nathaniel C.; Daby, Larry E.; Gravdahl, Vincent D.; McCaffrey, Patrick M.; Murray, Bruce A.; and Wright, Bruce W., 4,375,390, Cl. 204-15.000.
Wright, Kenneth N.: *See*—
Bradford, Marion M.; Orthoefer, Frank T.; and Wright, Kenneth N., 4,375,431, Cl. 260-123.500.
Wu, Philip T., to International Business Machines Corporation. Sense amplifier for integrated memory array. 4,375,600, Cl. 307-530.000.
Wurlitzer Company, The: *See*—
Schwartz, Harold O.; Gong, Ray F.; and Durk, Victor, 4,375,179, Cl. 84-439.000.
Wysong, Charles F., to Atlanta Stove Works, Inc. Radiant for gas heaters. 4,375,214, Cl. 126-92.0AC.
Xerox Corporation: *See*—
Lang, Joseph H., 4,375,326, Cl. 355-3.0SH.
Lewis, Richard B.; Koehler, Richard F., Jr.; and Connors, Edward W., 4,375,673, Cl. 364-555.000.
Park, Kenneth K., 4,375,329, Cl. 355-14.00C.
Yeh, Keming W.; and Bol, Izya, 4,375,643, Cl. 357-15.000.
Yagi, Shigenori: *See*—
Tabata, Norikazu; Yagi, Shigenori; Ueno, Takanori; and Ogawa, Shuji, 4,375,690, Cl. 372-82.000.
Yamamoto, Hiromasa: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,375,283, Cl. 266-44.000.
Yamamoto, Tadahiro, to Nissan Motor Co., Ltd. Intake device for internal combustion engine. 4,375,204, Cl. 123-52.00M.
Yamamoto, Yasushi S., to Eastman Kodak Company. Photographic compositions and elements spectrally sensitized with new methine dyes. 4,375,508, Cl. 430-588.000.
Yanagishima, Fumiya: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,375,283, Cl. 266-44.000.
Yang, Frank J., to Varian Associates, Inc. Method and apparatus for on-column detection in liquid chromatography. 4,375,163, Cl. 73-61.10C.
Yano, Kohzo: *See*—
Wada, Tomio; Uede, Hisashi; Takechi, Sadatoshi; and Yano, Kohzo, 4,375,319, Cl. 350-357.000.
Yates, Patrick A.; Swenson, Richard M.; and Hennings, George N., to United States of America, Navy. Programmable fuze. 4,375,192, Cl. 102-215.000.
Yazaki Corporation: *See*—
Mikami, Hitoshi; Saito, Toshimasa; and Ichikawa, Hiroshi, 4,375,229, Cl. 140-102.000.
Yeh, Keming W.; and Bol, Izya, to Xerox Corporation. Application of grown oxide bumper insulators to a high-speed VLSI SASMESFET. 4,375,643, Cl. 357-15.000.
Yerger, Joseph W. Underwater device for ruffling still water. 4,375,337, Cl. 366-343.000.
Yokota, Hideo; and Hosoe, Kazuya, to Canon Kabushiki Kaisha. Anti-ghost device for optical distance measuring system. 4,375,332, Cl. 356-1.000.
Yokoyama, Minoru: *See*—
Abe, Nobuyoshi; Kanemaru, Kiyoshi; and Yokoyama, Minoru, 4,375,373, Cl. 106-308.00B.
Yokoyama, Yoshikane: *See*—
Hatanaka, Masayuki; Kurita, Atsushi; Yokoyama, Yoshikane; and Kusakabe, Masahiro, 4,375,523, Cl. 523-212.000.
Yordanov, Nikolay V.: *See*—
Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,375,270, Cl. 228-37.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Ota, Akiho; and Negishi, Fumio, 4,375,442, Cl. 264-25.000.
Young, Alastair J.: *See*—
Burke, John P.; and Young, Alastair J., 4,375,251, Cl. 188-79.50P.
Young, Lewis B., to Mobil Oil Corporation. Selective production and reaction of p-Disubstituted aromatics over zeolite ZSM-48. 4,375,573, Cl. 585-467.000.
Young, Rodney C.: *See*—
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,375,472, Cl. 424-269.000.
Yudico, Ricardo: *See*—
Radman, Anton J., Jr.; and Yudico, Ricardo, 4,375,656, Cl. 360-102.000.
Yudovich, Amos, to Atlantic Richfield Company. Method of treating alpha-methylbenzyl alcohol dehydration residues. 4,375,570, Cl. 585-410.000.
Yuki, Heimei; and Okamoto, Yoshio, to Daicel Chemical Industries, Ltd. Novel optically active polymer preparation and use. 4,375,495, Cl. 428-402.000.
Zahner, Hansruedi, deceased (by Hochstrasser, Martin H., administrator), to Sprecher & Schuh AG. Fiberglass reinforced plastic insulating member submitted to mechanical efforts within a high-voltage switching enclosure containing sulphur-hexafluoride gas. 4,375,527, Cl. 524-492.000.
Zanussi Elettromeccanica S.p.A.: *See*—
Bazzani, Fausto; and Sevini, Paolo, 4,375,633, Cl. 340-73.000.
Zato, Thomas J.: *See*—
Templin, Frank C.; and Zato, Thomas J., 4,375,651, Cl. 358-191.100.
Zavoda, John R. Ultra-sensitive diaphragm with dual stress-relief structures. 4,375,182, Cl. 92-98.00R.
Zenith Radio Corporation: *See*—
DeVries, Adrian J., 4,375,624, Cl. 333-194.000.
Savic, Stanley D., 4,375,661, Cl. 361-91.000.
Templin, Frank C.; and Zato, Thomas J., 4,375,651, Cl. 358-191.100.
Zijlstra, Hinne: *See*—
Bruning, Hugo A. C. M.; van Vucht, Johannes H. N.; Westendorp, Frans F.; and Zijlstra, Hinne, 4,375,257, Cl. 206-0.700.
Zimmerman, Robert W. Exhaust stack cleaning and polishing implement. 4,375,115, Cl. 15-160.000.
Zinser Textilmaschinen GmbH: *See*—
Hartmannsgruber, Max, 4,375,149, Cl. 57-81.000.
Zioni, Dov: *See*—
Halperin, Yitzhak; and Zioni, Dov, 4,375,583, Cl. 179-90.0AD.
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., to Texaco Inc. Cylinder lubricating oil composition. 4,375,417, Cl. 252-33.400.
Zoleski, Benjamin H.; Sung, Rodney L.; and Cullen, William P., to Texaco Inc. Lubricating oil composition. 4,375,418, Cl. 252-33.400.
Zucchi, Alfred A.; Altoz, Frank E.; and Hughes, John W., to Westinghouse Electric Corp. Sliding compression air seal for removable electronic units. 4,375,290, Cl. 277-12.000.
Zupanovich, John D.; Myers, John G.; and Walker, Jerry L., to Calgon Corporation. Anionic polymers for reduction of viscosity of a magnesium hydroxide filter cake paste. 4,375,526, Cl. 524-436.000.
Zusi, F. Christopher: *See*—
Warner, Paul L., Jr.; Luber, Edward J., Jr.; Somerville, William A.; and Zusi, F. Christopher, 4,375,545, Cl. 546-263.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF MARCH, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bachmann, G. Merle; Burrous, Homer C.; and Shelton, Walter L., to Coca-Cola Company, The. Display panel for a vending machine. Re. 31,162, Cl. 194-1.00A.

Bayer Aktiengesellschaft: *See*—
Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, Re. 31,165, Cl. 525-67.000.

Burrous, Homer C.: *See*—
Bachmann, G. Merle; Burrous, Homer C.; and Shelton, Walter L., Re. 31,162, Cl. 194-1.00A.

Caterpillar Tractor Co.: *See*—
Cobb, Delwin E.; Gutman, Nathan; and Livesay, Richard E., Re. 31,164, Cl. 299-81.000.

Cobb, Delwin E.; Gutman, Nathan; and Livesay, Richard E., to Caterpillar Tractor Co. Cooling system for rock ripper tip. Re. 31,164, Cl. 299-81.000.

Coca-Cola Company, The: *See*—
Bachmann, G. Merle; Burrous, Homer C.; and Shelton, Walter L., Re. 31,162, Cl. 194-1.00A.

Cohnen, Wolfgang: *See*—
Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, Re. 31,165, Cl. 525-67.000.

Gardner, Charles R., to Poly-Glas Systems, Inc. Valve assembly and spraying apparatus therefor. Re. 31,163, Cl. 239-414.000.

Gutman, Nathan: *See*—
Cobb, Delwin E.; Gutman, Nathan; and Livesay, Richard E., Re. 31,164, Cl. 299-81.000.

Humme, Gert: *See*—
Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, Re. 31,165, Cl. 525-67.000.

Korda, Peter B., to RCA Corporation. Recovery of normally illegible, magnetically recorded information. Re. 31,166, Cl. 360-53.000.

Livesay, Richard E.: *See*—
Cobb, Delwin E.; Gutman, Nathan; and Livesay, Richard E., Re. 31,164, Cl. 299-81.000.

Mahorney, Ardith, legal representative: *See*—
Mahorney, Kenneth R., deceased, Re. 31,161, Cl. 137-596.160.

Mahorney, Kenneth R., deceased (by Mahorney, Ardith, legal representative), to Ross Operating Valve Company. Safety valve assembly for controlling clutch and brake in power press or the like. Re. 31,161, Cl. 137-596.160.

Ott, Karl-Heinz: *See*—
Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, Re. 31,165, Cl. 525-67.000.

Poly-Glas Systems, Inc.: *See*—
Gardner, Charles R., Re. 31,163, Cl. 239-414.000.

RCA Corporation: *See*—
Korda, Peter B., Re. 31,166, Cl. 360-53.000.

Ross Operating Valve Company: *See*—
Mahorney, Kenneth R., deceased, Re. 31,161, Cl. 137-596.160.

Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Transparent moulding composition of a polycarbonate and a resin. Re. 31,165, Cl. 525-67.000.

Shelton, Walter L.: *See*—
Bachmann, G. Merle; Burrous, Homer C.; and Shelton, Walter L., Re. 31,162, Cl. 194-1.00A.

Vernaleken, Hugo: *See*—
Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, Re. 31,165, Cl. 525-67.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Taylor, Milford J., to Erving Paper Mills. Adjustable length sheet dispenser, B1 3,459,353, Cl. 226—132.

Erving Paper Mills: *See*—
Taylor, Milford J. B1 3,459,353, Cl. 226—132.

Seachman, Ned J., to Xerox Corporation. Optical beam-splitting arrangements on object side of a lens. B1 4,272,684, Cl. 250—578.

Xerox Corporation: *See*—
Seachman, Ned J. B1 4,272,684, Cl. 250—578.

Hsu, Grace F.; Fong, Jaan-Jiue, to Minnesota Mining and Manufacturing Company. Acid zinc electroplating bath and process. B1 4,070,256, Cl. 204—55 R.

Minnesota Mining and Manufacturing Company: *See*—
Hsu, Grace F.; Fong, Jaan-Jiue. B1 4,070,256, Cl. 204—55 R.

LIST OF DESIGN PATENTEES

Amcor, Ltd.: *See*—
Zeidov, Meir; and Yavnieli, Mordechai, 268,126, Cl. D22-19.000.

Austin, John J., Jr.; Dickens, Robert L.; and Yochim, Albert, to Miles Laboratories, Inc. Bottle or similar article. 268,096, 3-1-83, Cl. D9-333.000.

Auto Alloys R & D Limited: *See*—
Tutton, William G. G., 268,114, Cl. D15-126.000.

Axelsson, Karl E. A., to Crafton Medical AB. Temperature sensing strip. 268,099, 3-1-83, Cl. D10-57.000.

Baikie, Roger B., to Canpro Sport Inc. Skate. 268,125, 3-1-83, Cl. D21-225.000.

Baldwin, Robley H. Vertebra for recreational vehicle and mobile home hose support. 268,091, 3-1-83, Cl. D8-356.000.

Ballard, James H. Shower stall. 268,128, 3-1-83, Cl. D23-57.000.

Barnes, Richard D.: *See*—
Valiulis, Stanley J.; and Barnes, Richard D., 268,095, Cl. D8-499.000.

Bass, Michael, to Bates Manufacturing Company, The. Stapling plier. 268,088, 3-1-83, Cl. D8-50.000.

Bates Manufacturing Company, The: *See*—
Bass, Michael, 268,088, Cl. D8-50.000.

Bliss & Laughlin Industries, Incorporated: *See*—
Johnson, David B.; and Schroeder, Verdell H., 268,113, Cl. D15-72.000.

Boggs, Stanley D. Tray for a chair arm. 268,072, 3-1-83, Cl. D6-199.000.

Braunstein, Ben: *See*—
Feiger, Jerrold C.; and Braunstein, Ben, 268,106, Cl. D12-310.000.

Brown, Raymond, to Garrod & Lofthouse Limited. Container for a cassette box or the like. 268,098, 3-1-83, Cl. D9-418.000.

Brunson, Gene; and Douglas, Paul. Putty knife. 268,085, 3-1-83, Cl. D8-14.000.

Brunson, Welton K.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 268,132, Cl. D24-64.000.

Burg, Arthur M.: *See*—
Burg, Saul; and Burg, Arthur M., 268,074, Cl. D7-5.000.

Burg, Saul; and Burg, Arthur M., to International Plastics, Inc. Food tray. 268,074, 3-1-83, Cl. D7-5.000.

Canpro Sport Inc.: *See*—
Baikie, Roger B., 268,125, Cl. D21-225.000.

Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. (Sodire). Cigar and cigarette filter perforator. 268,136, 3-1-83, Cl. D27-51.000.

Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. (Sodire). Cigar and cigarette filter perforator. 268,137, 3-1-83, Cl. D27-51.000.

Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. (Sodire). Cigar and cigarette filter perforator. 268,138, 3-1-83, Cl. D27-51.000.

Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. (Sodire). Cigar and cigarette filter perforator. 268,139, 3-1-83, Cl. D27-51.000.

Chambers, John A., to Dobson Park Industries Limited. Toy typewriter with integral platform. 268,122, 3-1-83, Cl. D21-127.000.

Clairol Incorporated: *See*—
Ellenson, Bernard; and Merl, Milton, 268,068, Cl. D6-130.000.

Clatworthy, Michael C.; and Mack, William P. S., to Dunlop Limited. Tire for a vehicle wheel. 268,102, 3-1-83, Cl. D12-140.000.

Clemens, Anton H., to Miles Laboratories, Inc. Printer. 268,111, 3-1-83, Cl. D14-111.000.

Corner, Michael R., to Dunlop Limited. Tire for a vehicle wheel. 268,103, 3-1-83, Cl. D12-147.000.

Coutta, John M. Television monitor. 268,110, 3-1-83, Cl. D14-77.000.

Crafton Medical AB: *See*—
Axelsson, Karl E. A., 268,099, Cl. D10-57.000.

Crespi, Gabriella. Table. 268,070, 3-1-83, Cl. D6-177.000.

Data Packaging Corporation: *See*—
Lyman, George F., 268,067, Cl. D3-35.000.

Dean, Rudy. Insulating holder for a bottle. 268,076, 3-1-83, Cl. D7-70.000.

Dickens, Robert L.: *See*—
Austin, John J., Jr.; Dickens, Robert L.; and Yochim, Albert, 268,096, Cl. D9-333.000.

Dobson Park Industries Limited: *See*—
Chambers, John A., 268,122, Cl. D21-127.000.

Douglas, Paul: *See*—
Brunson, Gene; and Douglas, Paul, 268,085, Cl. D8-14.000.

Drake, Betty D. Platform for supporting a ladder on stairs. 268,133, 3-1-83, Cl. D25-68.000.

Dretzke, Carl F. Club for a ball and club game. 268,123, 3-1-83, Cl. D21-211.000.

Dretzke, Carl F. Club for a ball and club game. 268,124, 3-1-83, Cl. D21-211.000.

Dunlop Limited: *See*—
Clatworthy, Michael C.; and Mack, William P. S., 268,102, Cl. D12-140.000.
Corner, Michael R., 268,103, Cl. D12-147.000.

Easton, Harlan J. Tray for veterinary supplies and equipment. 268,130, 3-1-83, Cl. D24-31.000.

Eldon Industries, Inc.: *See*—
Evenson, Mel, 268,119, Cl. D19-77.000.

Ellenson, Bernard; and Merl, Milton, to Clairol Incorporated. Dispensing rack. 268,068, 3-1-83, Cl. D6-130.000.

Enav, Abraham; and Rosenthal, Gordon, to Fairchild Industries, Inc. Aircraft. 268,107, 3-1-83, Cl. D12-331.000.

Evenson, Mel, to Eldon Industries, Inc. Combined sorting rack and writing instrument holder. 268,119, 3-1-83, Cl. D19-77.000.

Fairchild Industries, Inc.: *See*—
Enav, Abraham; and Rosenthal, Gordon, 268,107, Cl. D12-331.000.

Feiger, Jerrold C.; and Braunstein, Ben. Maritime maintenance vessel or the like. 268,106, 3-1-83, Cl. D12-310.000.

Garrod & Lofthouse Limited: *See*—
Brown, Raymond, 268,098, Cl. D9-418.000.

General Motors Corporation: *See*—
Schinella, John R., 268,105, Cl. D12-211.000.

Gibbard, David W.: *See*—
Pope, Owen H.; and Gibbard, David W., 268,101, Cl. D12-104.000.

Gifford-Hill & Company, Inc.: *See*—
Radmaker, Mark, 268,094, Cl. D8-399.000.

Goshi Kaisha Kanemitsu Doko Yosetsu-Sho: *See*—
Kanemitsu, Yukio, 268,092, Cl. D8-360.000.

Gubbe, Bernd: *See*—
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Hovel, Harold J. Silicon solar cell. T102,801, 3-1-83, Cl. 136-255.000.

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